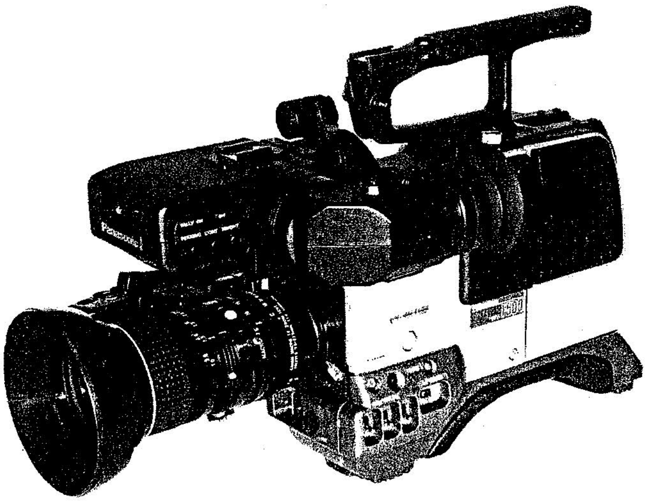
ORDER NO. AVS9301642C8

Service Manual

Colour Video Camera

WV-F500E Series



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Panasonic

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Vol. 1

WV-F500E Series

Vol. 1

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Panasonic

SPECIFICATIONS

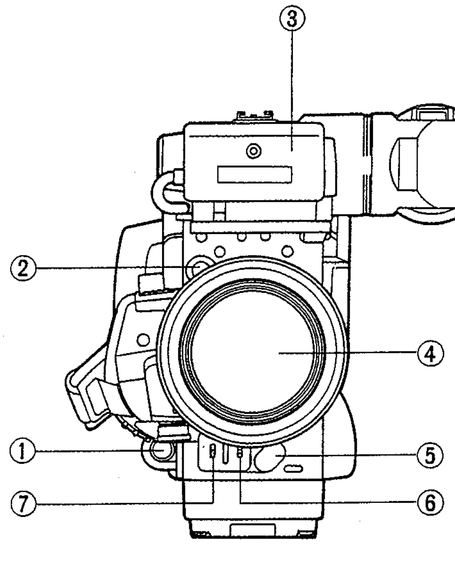
ENG COLOUR CAMERA WV-F500

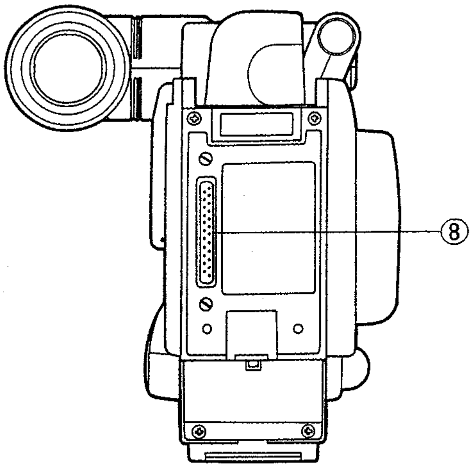
Pick-up System:	Middle index prism system (F1.4)
Image Sensor:	Three 1/2" interline transfer (IT) super high sensitivity CCDs
Pixels:	752 (Horizontal) × 582 (Vertical)
Scanning Standard:	625 lines, 50 fields, 25 frames
Synchronizing System:	Internal or external (gen-lock), automatically switchable
Internal:	PAL standard
External (gen-lock) Input:	PAL composite (VBS) signal or black burst signal
Subcarrier Phase for Gen-lock:	Freely adjustable over 360°
Horizontal Phase for Gen-lock:	Adjustable
Video Output:	1.0 Vp-p PAL composite / 75 ohms × 2 (BNC connector) Y/C (S-VIDEO) Output: 0.7 Vp-p Luminance level (Y) composite/75 ohms × 1 (S-VIDEO connector) 0.3 Vp-p burst level chrominance/75 ohms × 1 (S-VIDEO Connector) 1.0 Vp-p PAL composite/75 ohms × 1 (26 pin VTR/RCU connector) R/G/B, Y/PB (B-Y) / PR (R-Y), Y/C/B, ENC, Switchable) R/G/B: 0.7 Vp-p/75 ohms × 1 each Y/PB/PR: Y: 1.0 Vp-p (Sync: 0.3 Vp-p)/75 ohms × 1 PB/PR: 0.525 Vp-p/75 ohms × 1 each Y/C/B: Y: 0.7 Vp-p Luminance level (Y) Composite/75 ohms × 1 C: 0.3 Vp-p burst level chrominance/75 ohms × 1 B: 0.7 Vp-p/75 ohms × 1 ENC: PAL: 1.0 Vp-p composite/75 ohms × 1
Auxiliary Input:	1.0 Vp-p composite/75 ohms through 26 pin VTR/RCU connector
Audio Output:	−20 dBm or −60 dBm/unbalanced, switchable (26 pin VTR/RCU connector)
Illumination Required:	2000 Lux at F8.0, 3200K
Minimum Illumination:	4 lux at F1.4 with +24 dB gain, more than 70% output level
Signal-to noise Ratio:	60 dB (typical, luminance) without aperture correction
Horizontal Resolution (at centre):	700 lines (Y signal)
Registration:	0.05% (entire picture area, excluding lens)
Detail/Aperture:	Horizontal and vertical (2-line type)
White Balance:	Automatic white balance setting (AWC with two memories) and Manual white balance
Black Balance:	Automatic with pulse canceler
Encoder:	Y, R-Y, B-Y
Colour Bar:	Built-in colour bar generator with time, date generator and camera ID.
Electronic Shutter:	1/120 sec, 1/250 sec, 1/500 sec, 1/1000 sec, 1/2000 sec
Colour Conversion Filters:	3200K, 5600K with 12.5% ND, 5600K, 3200K with Cross Filter
Maximum Cable Length:	26 pin Studio Cable: Max. 300m
Switches:	
Camera:	Power, Colour Bar/+6 dB/Camera Selection, High Gain Selection, White Balance Selection, Auto White/Auto Black Set, Level Indicator/Zone, VTR Start/Stop, Check, Lens Iris Selection, Detail Level Selection, Detail Band Selection, Recording Time Reset, Electronic Shutter On/Off Electronic Shutter Speed Selection, Scene File Selection, Page, Item, Up, Down
Camera Adaptor:	VTR Compatibility, Audio Level Selection, Earphone Out Selection, VTR Video Output Selection Switch 1, VTR Video Output Selection 2, Power Selection
Viewfinder:	Tally ON/OFF
Zoom Lens (Canon 13x Lens):	Servo/Manual Zoom Selection, Servo Zoom Control, Iris Control Selection, Auto Iris, Return Video, Macro VTR Start/Stop

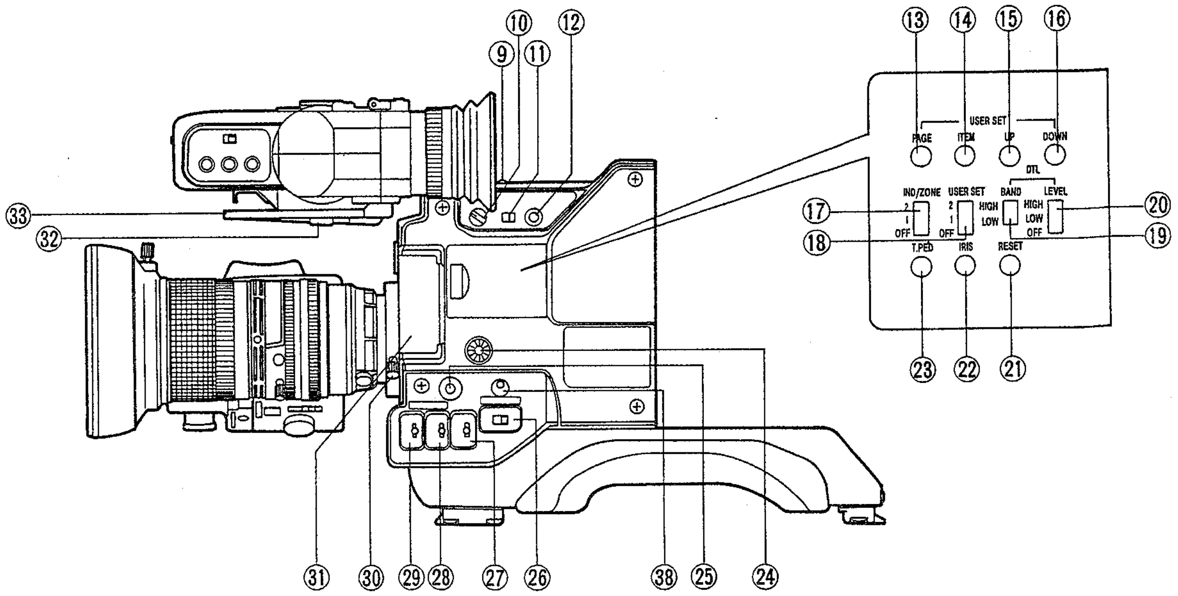
Controls:	
Camera:	Total Pedestal, Lens Iris, Audio (with AU-45H)
Camera Adaptor:	Earphone/Intercom Level
Viewfinder:	Brightness, Contrast Peaking
Standard Lens (Canon 13X Lens):	13:1 auto iris servo control zoom lens, 7.5 - 97.5 mm with macro mode, 1.4
Lens Iris:	Automatic or manual
Lens Mount:	Bayonet mount for 1/2" pickup device
Lens Filter Size:	82 mm P=0.75 (with food), 72 mm P=0.75 (with lens)
Viewfinder:	1.5" (1-3/8" actual image size) electronic viewfinder with character display, safety zone, Date/Time and zebra level indicator
Power Source:	12V DC, 5 sources as follows: (1) Battery Pack (2) AC Adaptor (3) External DC source through 4-pin DC connector (4) VTR (external AC adaptor) (5) Remote control Unit through VTR/RCU connector
Battery Pack Operating Time:	WV-PS60: 12V 1650 mAh WV-PS33: 12V 3500 mAh
Power Consumption:	Camera Head: (12V DC) 11.8W ENG Configuration (12V DC): 16.6W (with WV-AD500, WV-VF40)
Ambient Operating Temperature:	−10°C - +45°C (50°F - 113°F)
Ambient Operating Humidity:	30% - 90%
Dimensions:	
• Camera Head Only	134 (W) × 245 (H) × 285 (D) mm (5-1/4" (W) × 9-5/8" (H) × 11-3/16" (D))
• ENG Configuration (Exclude the Tripod Mounting Adaptor)	244 (W) × 283 (H) × 460 (D) mm (9-9/16" (W) × 11-1/8" (H) × 18-1/8" (D))
• Studio Configuration (Exclude the Tripod Mounting Adaptor)	183 (W) × 510 (H) × 531 (D) mm (7-3/16" (W) × 20-1/16" (H) × 20-7/8" (D))
Weight:	
• Camera Head only	2.4 kg (5.3 lbs.)
○ ENG Configuration (Exclude the Tripod Mounting Adaptor)	5.2 kg (11.5 lbs.)
• Studio Configuration (Exclude the Tripod Mounting Adaptor)	7.5 kg (16.5 lbs.)

Dimensions and weights are approximate.
Specifications are subject to change without notice.

MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS



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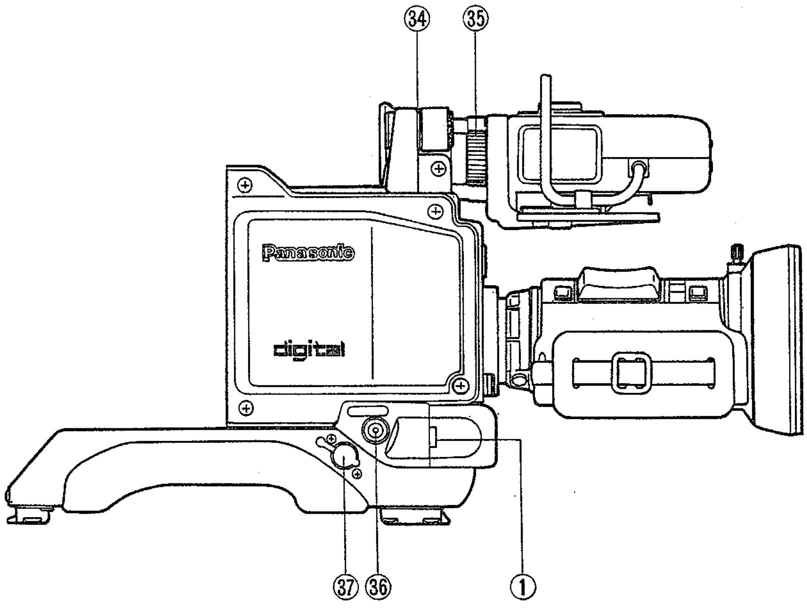
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CAMERA HEAD WV-F500H

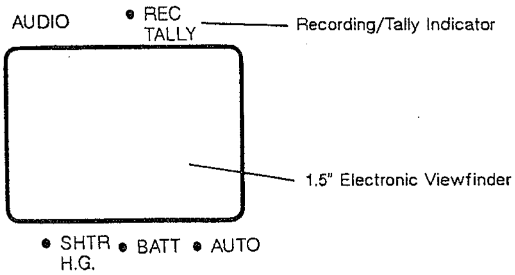
1. **Lens Connector (12-pin) (LENS)**
   Connect the lens cable to this connector.

2. **Viewfinder Connector (12-pin) (VIEWFINDER)**
   Connect the viewfinder cable from the 1.5" or 5" Electronic Viewfinder to this connector.
   Note:
   When connecting the 5" Electronic Viewfinder, WV-VF65B, to this connector, use the Viewfinder Conversion Cable supplied with the WV-VF65B. Refer to page 22 for details.

3. **1.5" Electronic Viewfinder**
   This small 1.5" (1-3/8" actual image size) monitor shows exactly the image picked up by the lens. The viewfinder can be tilted 90° from horizontal and it is adjustable up and down by approximately 13/16" (20 mm). Further, the viewfinder may be slid laterally by up to 1-3/4" (45 mm) and 13/16" (20 mm) back and forth. Refer to page 14 for details.

4. **Auto Iris Servo Control Zoom Lens**
   This is a high-quality zoom lens offering automatic as well as manual iris control and servo control zoom. The lens features a bayonet mount and F1.4 maximum aperture. Picture size may be magnified by up to 13 times through use of the zoom feature. Simply rotate the macro ring for close-up or wide angle recording. Macro shooting is possible of objects up to 1-15/16" (5 cm) from the lens surface. Refer to page 15 for details.

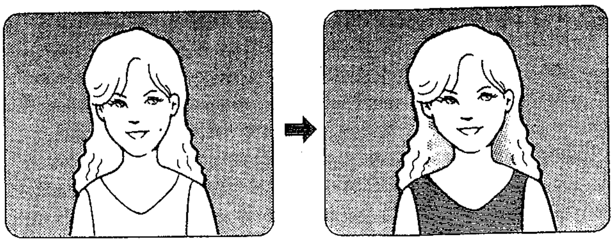
5. **VTR Start/Stop Button (VTR) (parallel operation)**
   This button is used to change the recorder mode from pause (Recording Pause) to recording and functions in the same way as the VTR Start/Stop Button (77) on the lens. Press once to start recording. While recording, the Tally Indicator in the viewfinder and the Recording/Tally Indicator (9) light, and the Tally Light (61) on the viewfinder also lights.



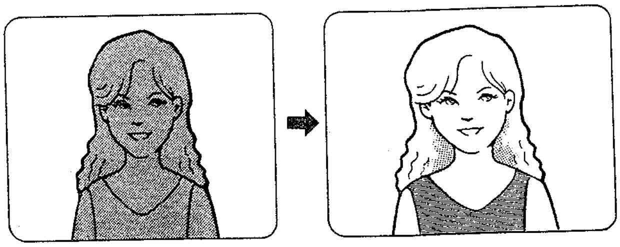
   When this button is pressed once more, the recorder is set to the Pause mode (Recording Pause), and the Recording/Tally Indicator and Tally Light will go off.

6. **Auto White/Auto Black Set Switch (AUTO W/B BAL AWC/HOLD/ABC)**
   This switch sets the white balance and black balance automatically as follows:
   AWC:
   This position is used for setting the white balance when the White Balance Selection Switch (28) is set to the AWC A or AWC B position. White balance adjustment is required when "AWC A NG" or "AWC B NG" starts blinking in the viewfinder or when the Auto Warning Indicator in the viewfinder lights. Two white balance settings for two light sources, such as indoor and outdoor, can be retained in the memory. In this case both the AWC A and AWC B positions are used.
   HOLD:
   In this position, the white and black balances set at the AWC or ABC position can be held fixed if so desired for at least one year.
   ABC:
   This position is used for setting the black balance. Black balance adjustment is required when "ABC NG" starts blinking in the viewfinder or when the Auto Warning Indicator in the viewfinder lights.
   Note:
   The picture will flash in the viewfinder while the black balance is being set. This flashing indicates that the adjustment is currently being performed and will cease once the adjustment is completed.

7. **Lens Iris Selection Switch (LENS IRIS: 1/2 OPEN/NOR/1/2 CLOSE)**
   This switch can be used to set the lens iris opening to compensate for unusual lighting conditions. If the object is brightly lit against a dark background, set this switch to the 1/2 CLOSE position. This will close the lens iris by a 1/2 F stop.

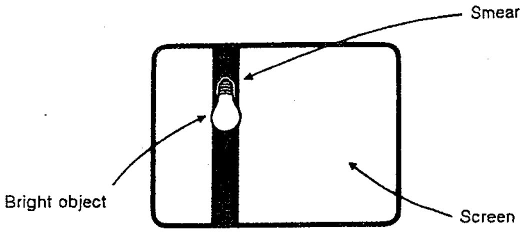


   If the object is relatively dark and the background is bright, set the switch to the 1/2 OPEN position. This will open the lens iris by a 1/2 F stop.



   At the normal (NOR) position, the lens is operating with normal lens iris openings.
   Notes:
   1. If this switch is used, be sure to return it to the detent NOR position after use.

2. If the camera is aimed at an extremely bright object, such as the sun or a lamp, vertical bars (i. e. smear) may appear in the picture. This is a peculiar phenomenon of the CCD and is quite normal. Try as much as possible to avoid shooting scenes with extremely bright light, as this could also be harmful to the camera.



3. Set this switch to the NOR position when the camera is used together with the Remote Control Unit (RCU).

8. **68-pin Multi Connector**
When mounting the S-VHS dockable VCR (AG-7450A) the MII dockable VCR (AU-45H) or the WV-AD500 Camera Adaptor, engage the 68-pin connectors on the Camera Head and VCR/VTR Adaptor, or Camera Adaptor.

9. **Recording/Tally Indicator (REC TALLY)**
This indicator changes to one of three colours, depending on the camera mode.
This indicator lights red when the camera is set to the recording mode (through the VTR Start/Stop Button), and informs that the scene is being recorded. The Tally Indicator also lights when the camera is in full system operation together with the Remote Control Unit and Special Effects Generator. In case a tape is not loaded or the tape end is reached, or if the servo mechanism is working improperly, this indicator will start blinking to warn the operator of such faults. This indicator lights green when the camera is set to the shutter on mode. This indicator lights yellow when the camera is set to the recording mode and the shutter on mode is selected.
Note:
If a portable VTR is not connected to the camera, the Recording/Tally Indicator will not light.

10. **Scene File Selection Switch (SCENE FILE, USER/1/2/3)**
This switch is used to select the most suitable camera conditions for various scenes to obtain the best picture.
1: This position is suitable for shooting in normal condition.
Note:
This level is adjusted under the condition of 2000 lux 3200K at F8.
2: This position is suitable for shooting under fluorescent lighting.
Note:
When the White Balance is set to 3200K, the camera's Matrix Masking can not be changed even if this position is chosen.
3: This position is suitable for low illumination level shooting.
USER:
The camera's conditions can be set to the desired level by the user.

11. **Electronic Shutter On/Off Switch (SHUTTER, ON/OFF)**
This switch is used to select the Electronic Shutter On/Off mode.

12. **Electronic Shutter Speed Selection Switch (SHUTTER, SELECT)**
By setting the Electronic Shutter On/Off Switch (11) to ON position, the shutter speed can be selected by this switch. Fast-moving objects, when shot at the slow shutter speeds typically found in conventional cameras, will appear blurred. This feature enables blur-free recording of high-speed action, such as car racing, golf swings, gymnastics, birds in flight, etc. The speed of the electronic shutter can be either 1/120 sec, 1/250 sec, 1/500 sec, 1/1000 sec or 1/2000 sec.

13. **Page Switch (PAGE)**
By repeated pressing of this switch, the Initial Set and User Set menus can be changed in the viewfinder or on the monitor.

14. **Item Switch (ITEM)**
By pressing this switch, the cursor is moved to the various items in the menus.

15. **Up Switch (UP)**
The On mode of an item can be selected and/or the level of an item can be increased in the Initial Set or User Set menus by this switch.

16. **Down Switch (DOWN)**
The Off mode of an item can be selected and/or the level of an item can be decreased in the Initial Set or User Set menus by this switch.

17. **Level and Zone Indicator Switch (IND/ZONE, 2/1/OFF)**
When this switch is set to position 1, the centre marker which stands for the centre point, and the safety zone (approx. 90% or 95%) is displayed in the viewfinder. When this switch is set to position 2, the zebra pattern is displayed with the marker in the viewfinder. Picture images exceeding a specified level (95 IRE) will produce a zebra pattern barely visible.
Notes:
    1. The marker shown the electronic centre of the picture and might not coincide with the optical centre of the picture.
    2. The centre marker on/off, type of safety zone and zebra level can be set by the Initial Set mode.

18. **User Set Switch (USER SET 2,: 1, OFF)**
By setting this switch to the 1 position, the User set or Initial set menu is displayed in the viewfinder and the menu setting is available.
By setting this switch to the 2 position, the User set or Initial Set menu is displayed in the viewfinder and on the monitor (only composite video output).
To display the normal picture in the viewfinder or on the monitor, set this switch to the OFF position.

19. Detail Frequency Band Selection Switch (DTL, BAND-HIGH/LOW)

This switch selects the frequency band of the detail/aperture correction for improved sharpness of the picture as follows:

HIGH:

This position is suitable for a wide-band VTR such as S-VHS or MII format VTR.

LOW:

This position is suitable for 3/4" U-vision VTR or VHS VTR.

20. Detail Level Selection Switch (DTL, LEVEL-HIGH/LOW/OFF)

The detail/aperture level can be selected by this switch in three steps.. Set this switch to the desired position while observing the sharpness of the picture.

Note:

When over modulation has occurred with recording or playing back the VTR, set this switch to LOW position.

21. Recording Time Reset Button (RESET)

The accumulated recording time is displayed in the viewfinder under REC TIME while the Check Button (25) is pressed. The time can be reset to "0 MIN" by pressing either this button or the one on the AG-7450A VTR. Thus, total recording time can easily be checked by first pressing this button at the outset of a new recording and then checking REC Time at the end of the recording by pressing the check button.

Note:

The REC TIME displayed in the viewfinder and the one displayed on the AG-7450A might be different.

22. Lens Iris Control (IRIS)

The auto iris level can be adjusted by this control. When replacing the lens, check the output signal of the camera and make any necessary adjustment with this control, if required.

23. Total Pedestal Level Control (T. PED)

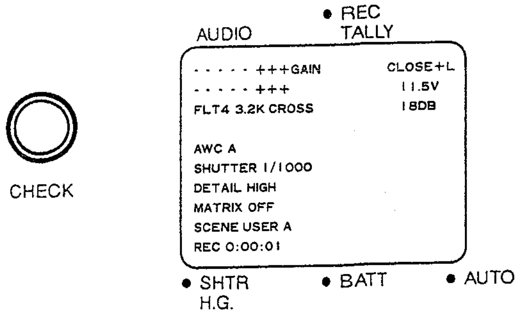
This control is used for adjusting the pedestal level of the video signal (luminance). When attempting to match the pedestal level of two or more cameras in a system, use a waveform monitor or oscilloscope for precise adjustment.

24. Audio Level Control (AUDIO)

Only when the MII format VTR AU-45H is connected, the microphone level can be adjusted.

25. Check Button (CHECK)

The operating conditions of the camera can be displayed in the viewfinder by keeping this button pressed. Refer to page 78 for details.



26. Power Switch (DC POWER, OFF/SAVE/ON)

This switch selects the operating mode of the camera. Refer to OPERATING PROCEDURE FOR CAMERA RECORDER APPLICATION on page 54 for details.

27. Colour Bar/+6 dB/Camera Selection Switch (BAR/+6 dB/CAMERA)

This switch selects the video output signal as follows:

BAR:

A full colour bar is provided from the Monitor Output Connector (36), the VTR/RCU Connector (41) and Video Output (52). The date, time and ID number display, superimposed on the colour bar, will be recorded. In addition, the system's condition can also be recorded by pressing the Check Button (25).

+ 6dB:

In combination with the High Gain Selection Switch (29), the overall gain of the camera can be set to +6 dB, +15 dB or +24 dB.

CAMERA:

In combination with the High Gain Selection Switch (29), the overall gain of the camera can be set to 0 dB, 9 dB or 18 dB.

28. White Balance Selection Switch (WHITE BAL, AWC A/B /MANUAL)

This switch is used to select the white balance mode as follows:

AWC A:

The white balance can be set automatically by pressing the Auto White/Auto Black Set Switch (6) upwards. The setting is stored in memory A.

AWC B:

Similar to AWC A, but the setting is stored in memory B.

MANUAL:

Proper white balance is achieved for 3200K colour temperature with the Filter Selection wheel (31) set to position 1.

Notes:

1. Two white balance settings, one each for different lighting conditions such as indoor and outdoor, may be stored in the two memories, AWC A and AWC B.
2. This switch should be set to the AWC A or AWC B position when the Remote Control Unit (RCU) is used.

29. **High Gain Selection Switch (GAIN 0/+9 dB/+18 dB)**
Normally set this switch to the 0 dB position. Positions +9 dB and +18 dB increase the video output amplitude for dark scenes and are equivalent to opening the lens iris 1.5 or 3 F-stops, respectively.

30. **Lens Hold Ring/Knob**
Turn this ring/knob clockwise to secure the lens to the camera.

31. **Filter Selection Wheel**
This wheel, which has four positions, controls two built-in colour temperature conversion filters and one ND filter.
(1) 3200K - indoor light (tungsten, halogen, quartz lamps)
(2) 5600K +12.5% ND - daylight (sunny)
(3) 5600K - daylight (cloudy/rainy)
(4) 3200K +CROSS - indoor light (tungsten, halogen, quartz lamps, cross filter) with Cross filter.
Select the position according to the light source (see page 67). The position of the Filter Selection Wheel is displayed in the viewfinder when the Check Button (25) is pressed.
Caution:
If the incorrect filter is selected, the Automatic White Balance Setting may not be successfully completed.

32. **Viewfinder Lock Lever**
The viewfinder's position is locked or released through the use of this lever. When the lever is released, the viewfinder can be slid approximately 1-3/4" (45 mm) laterally and 13/16" (20 mm) back and forth. Be sure to lock the level after having adjusted the viewfinder position.

33. **Viewfinder Mounting Base**
The 1.5" Electronic Viewfinder, WV-VF40, is mounted on the camera by first installing this base onto the camera. Refer to page 25 for detailed mounting instructions.

34. **Microphone**
This Microphone is a nondirectional condenser microphone. When sound from the surroundings is not desired, use the optional Microphone WM-L30 and Microphone Holder WV-MH500.

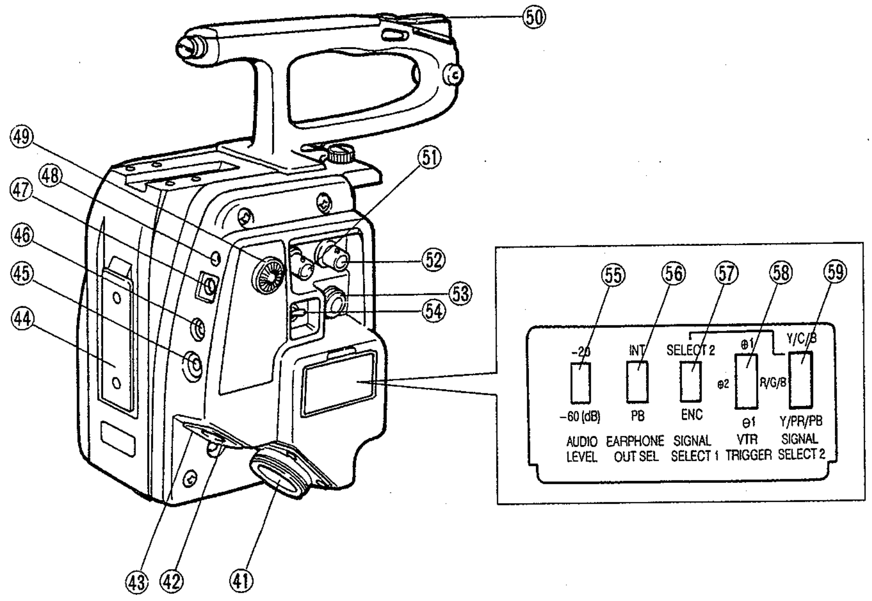
35. **Viewfinder Height Adjustment Knob (UP/DOWN)**
The height of the viewfinder can be adjusted by first loosening this knob, adjusting the viewfinder to the proper height, and then tightening this knob. Adjustment of up to 13/16' (20 mm) is possible.

36. **Monitor Output Connector (MONITOR)**
A composite video signal for monitoring is provided at this connector.
Note:
This output signal might differ slightly from the output signal of the Video Output Connector (52).

37. **Remote Control Box Connector (RCB)**
This connector is provided for the Remote Control Box (RCB) connection.
Note:
When connecting the BNC Cable to the Monitor Output Connecter (36), the video signal from this connector through the Remote Control Box can not be output.

38. **Power Indicator**
This indicator lights red when the camera is operating. When the camera is in the standby mode, the indicator lights green.

CAMERA ADAPTOR WV-AD500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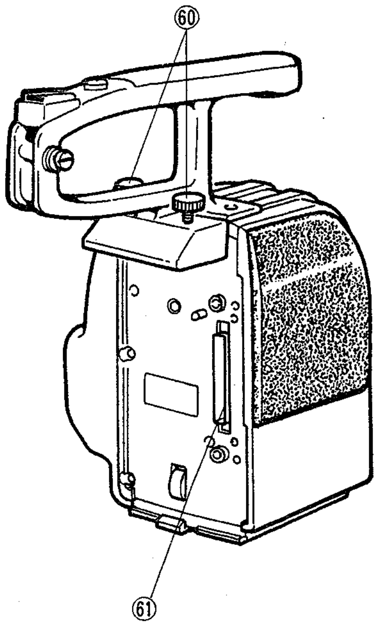
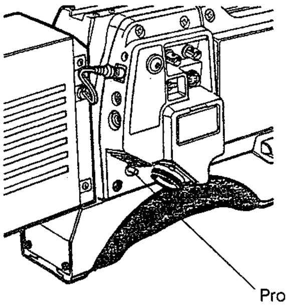
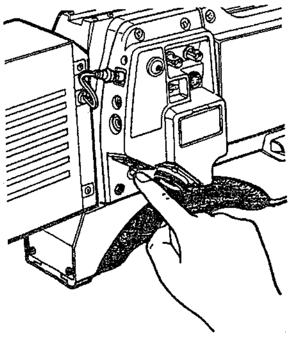


41. **VTR/RCU Connector (26-pin) (VTR/RCU)**
When using the camera together with a Panasonic portable colour VTR, the specified VTR cable should be connected between the camera and VTR. This connector is also used for connection of the 26-pin studio cable from the Remote Control Unit (RCU) for comprehensive system operation. When connecting the 26-pin studio cable to this connector, the camera is automatically set to the RCU operation mode.
    - 1/2" VHS and 3/4" U-vision portable VTR (10-pin)
        - WV-CA26A10 (26P-10P cable)
    - 3/4" U-vision portable VTR (14-pin)
        - WV-CA26A/14 (26P-14P cable)
    - MII portable VTR (26P)
        - WV-CA26A/26 (32P-26P cable)
    - 26 pin studio cable (RCU cable)
        - WV-CA26U15
        - WV-CA26U30
        - WV-CA26U100

42. **Circuit Protector (BREAKER)**
When an excessive current flows into the camera due to a short circuit or some other reason, the red button of this circuit protector protrudes to cut off the circuit.

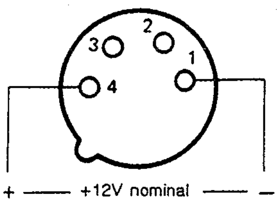


After solving the problem, press the red button again to recover the circuit.



CAUTION:
Refer servicing to qualified service personnel to solve the problem.

43. **External DC Input Connector (XLR, 4-pin) (EXT DC)**
This connector accepts the power cable from an external DC source supplying nominal power of 12V, 2A (a belt type battery or car battery for example). This connector also accepts the power cable from an AC adaptor. For driving the studio configuration, a 12V DC, 2.5A power source is required.



44. Battery Pack Mounting Angle
Mount the Battery Pack WV-PS60/WV-PS33 or the AC Adaptor/Charger WV-PS34 on the camera by sliding it down along this mounting angle.

45. Intercom Jack (M6) (INTERCOM)
This jack is used for communication between the camera operator and operators of the RCU and Special Effect Generator in a system.

46. Earphone Jack (M3) (EARPHONE)
When an earphone is connected, the sound picked up through the microphone or played back audio from a 3/4" U-vision recorder, 26-pin MII format portable VTR or 14-pin S-VHS portable VTR connected to the camera, can be monitored.

47. Battery Connector (BATTERY)
Connect the cord from the Battery Pack to this connector.

48. Recording/Tally Indicator (red) (REC TALLY)
This indicator lights when the VTR is set to the recording mode (through the VTR Start/Stop button), and informs the person concerned of scenes being recorded.
The Tally indicator also lights when the camera is in full system operation together with the Remote Control Unit and Special Effects Generator.
In case a tape is not loaded or the tape end is reached, or if the servo mechanism is working improperly, this indicator will start blinking to warn the operator of such faults.

Note:
If a portable VTR is not connected to the camera, the Recording/Tally indicator will not light.

49. Earphone/Intercom Level Control (LEVEL)
Use this control to adjust the volume level in the earphone connected to the Earphone Jack (46) or the headset connected to the Intercom Jack (45).

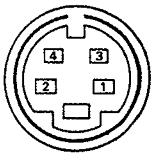
50. Accessory Shoe

51. Gen-lock Input Connector (BNC) (GEN-LOCK)
The colour video signal of the camera is automatically synchronized to the gen-lock signal (composite or black burst) which is supplied to this connector. The gen-lock signal is used for system reference, such as when using a Special Effects Generator.

Caution:
If the gen-lock signal is jittery (like that obtained from VTR playback), the camera may not be able to synchronize properly.

52. Video Output Connector (BNC) (VIDEO OUT)
A composite video signal is provided at this connector.

53. S-VHS Video Output Connector (S-VIDEO OUT)
The luminance (Y) and chroma (C) signals for S-VHS VTR or monitor are provided at this connector.



S-VIDEO OUT (female)

No.	Contents
1	Y Ground
2	C Ground
3	Y Signal Output
4	C Signal Output

54. Power Selection Switch
(POWER SELECT, BATT/EXT DC-VTR/RCU)
By using this switch, the desired power source connected to the camera can be selected.

BATT/EXT DC:
This position is used for power supply from the battery pack, and external DC source or through an AC adaptor.

VTR/RCU:
This position is used when power is to be supplied through the 26-pin connector from the VTR or the Remote Control Unit (RCU).

55. Audio Level Selection Switch
(AUDIO LEVEL −20/−60 dB)
Two audio output levels to the VTR can be selected: −20 dB or −60 dB. The camera has been preset to −20 dB at the factory.

56. Earphone Selection Switch
(EARPHONE OUT SEL, INT/PB)
This switch selects the audio signal from the Earphone jack (46) to be monitored.

INT:
The sound picked up by the microphone can be monitored.

PB:
The played back audio from a 3/4" U-vision recorder, 26-pin MII format portable VTR or 14-pin S-VHS portable VTR, obtained through the VTR/RCU Connector of this adaptor, can be monitored.

Note:
The camera has been preset to the INT position at the factory.

57. VTR Video Output Selection Switch 1
(SIGNAL SELECT 1)
This switch select the video output signal supplied to the VTR/RCU connector (41).

ENC:
A composite video signal is supplied for 1/2" VHS and 3/4" U-vision portable VTRs.

SELECT 2:
The signal selected by the VTR Video Output Selection Switch (59) is output from the VTR/RCU Connector (41)

Note:
The camera has been preset to the ENC position at the factory.

58. **VTR Compatibility Switch (⊕1/⊕2/⊖1)**
Set this switch according to the VTR type connected to the camera.
⊕1: For 1/2" VHS VTRs.
⊕2: For 3/4" U-vision VTRs, connected to the camera, S-VHS VTRs and MII portable VTRs.
⊖1: If a VTR of other manufacture is used, or if the VTR pauses when the tape should be running and vice versa, this switch should be set to this position.

Notes:

1) The switch has been preset to the ⊕1 position at the factory.
2) Some VTRs may not operate properly when connected to this camera, even though the setting of this switch is changed. Please consult your dealer for further information.

59. **VTR Video Output Selection Switch 2 (SELECT 2)**
When the VTR Video Output Selection Switch 1 is set to the SELECT 2 position, this switch should be set according to the VTR type.

Y/C/B:
The chrominance (C) and luminance (Y) signals are supplied from the R, G and B Output Connectors (145) of the RCU and from the VTR/RCU Connector (41) for S-VHS format VTR.

R/G/B:
The R, G and B signals are supplied from the R, G and B Output Connector (145) of the RCU and from the VTR/RCU Connector (41).

Y/BP/PR:
The colour difference (R-Y & B-Y) signals and luminance (Y) signal are supplied from the VTR/RCU Connector (41) and the R, G and B Output Connectors (145) on the Remote Control Unit for MII and Betacam format VTRs.

60. **Camera Adaptor Holding Screws/Knobs.**
These screws/knobs are used to fix the camera adaptor to the Camera head.

61. **68-pin Multi Connector**
When mounting the camera adaptor, engage the 68-pin connectors on the Camera and the Camera adaptor.

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ORDER NO. AVS9301642C8

Service Manual

Colour Video Camera

WV-F500E Series

Vol. 2

Adjustment Procedures

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Panasonic

ADJUSTMENT PROCEDURE

1. TEST EQUIPMENT REQUIRED

Following equipments are required for adjustment of WV-F500E Series.

- Test signal generator (T.S.G) or special effect generator (S.E.G.) (Black burst output)
- Waveform monitor
- Vectorscope
- Oscilloscope (Dual trace, More than 100 MHz bandwidth, Delayed Sweep)
- Digital voltmeter (D.V.M.)
- Frequency counter
- Color video monitor.
- Logarithmic gray scale chart (YWV2310RB99)
- Resolution chart (YWV1400RB99)
- In-mega cycle chart (YF1NMEGA-K)
- Camera Adaptor (WV-AD500)
- DC power supply (DC 12V, 2A or more)
- Lighting (200 footcandles (2000 lux), 3200°K)
- Lux meter
- Tripod
- Trpod Mounting Adaptor (WV-QT700)
- Auto Iris Servo Control zoom Lens
- 1.5" Electric viewfinder (WV-VF40)
- Extension board (YWV0EA0158AN)
- Extension board (YWV0EA0229AN)
- Extension cable (YWV0EA0114AN)

2. DISASSEMBLING PROCEDURE FOR ADJUSTMENT

2-1 Side Cover

- Loosen four screws which hold the side cover and remove the side cover.

(A) For left side cover (viewed from the front)

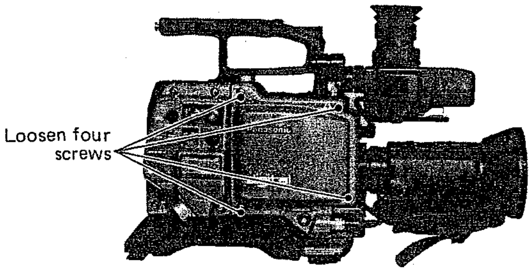


Fig. 2-1-1

(B) For right side cover (viewed from the front)

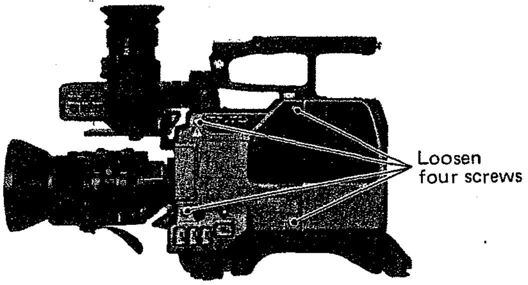


Fig. 2-1-2

2-2 Preamp Board

- Loosen two screws and remove one screw.
- Disconnect CN1, CN2, CN3 and CN4 on the Preamp Board.

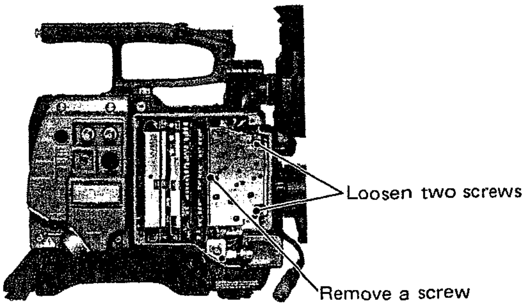


Fig. 2-2-1

2-3 Camera Adaptor

- Loosen two screws.

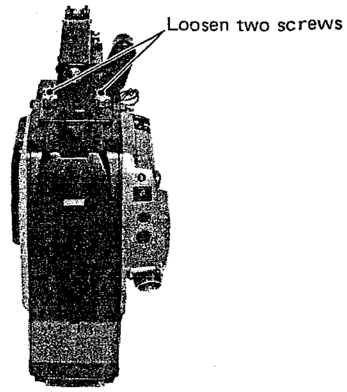
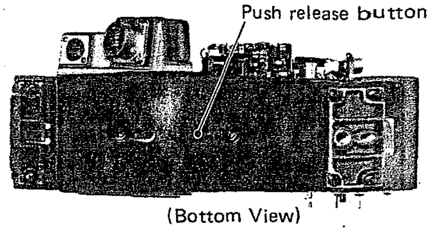


Fig. 2-3-1

- While pushing release button remove the camera adaptor by pulling it backward.



(Bottom View)

Fig. 2-3-2

- Remove one screw holding the rear cover and four screws holding the operation cover.

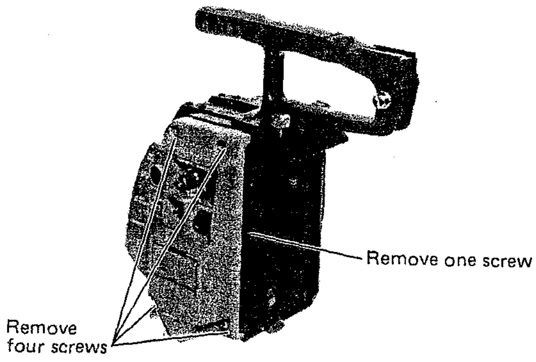

Remove one screw
Remove
four screws

Fig. 2-3-3

3. PRISM AND CCD ASSEMBLY REPLACEMENT

- Remove the servo control zoom lens, Electronic viewfinder and Camera Adaptor.
- Remove four screws holding the bottom plate and remove the bottom plate.
- Remove two screws holding the shoulder pad and remove the shoulder pad.

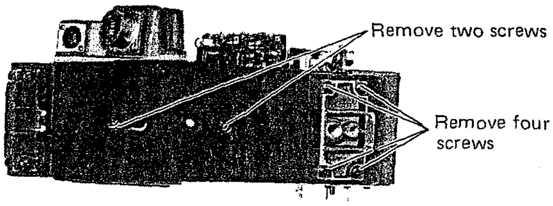

Remove two screws
Remove four
screws

Fig. 3-1

- Remove four screws holding the bottom cover and remove the bottom cover.

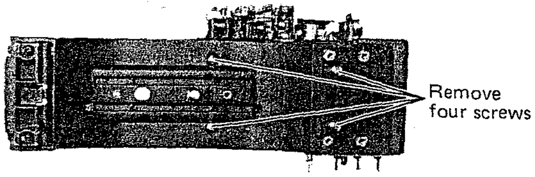

Remove
four screws

Fig. 3-2

- Disconnect DC plug from the camera by pulling it.

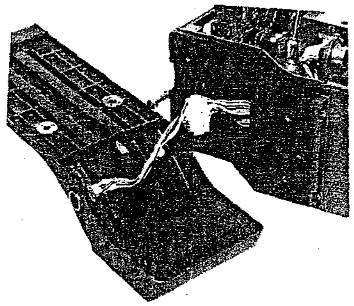


Fig. 3-3

- Remove four screws holding the front cover assy and remove the front cover.
- Remove six screws holding the front cover and remove the front cover.

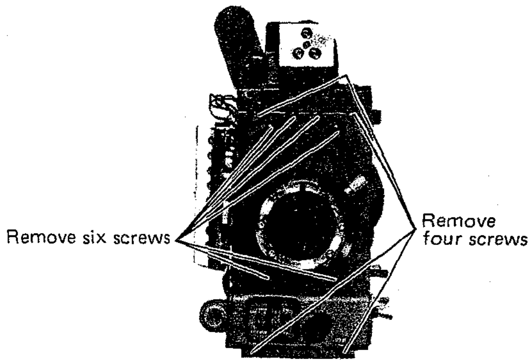

Remove six screws
Remove
four screws

Fig. 3-4

- Disconnect eight cnnector and remove the head optical assy unit.

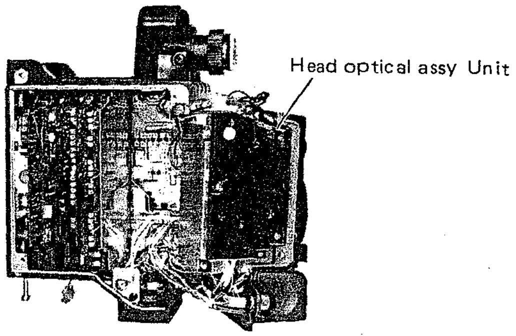

Head optical assy Unit

Fig. 3-5

- Remove three screws holding the pre-amp board and remove the pre-amp board.

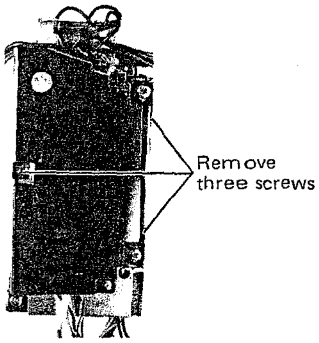

Remove
three screws

Fig. 3-6

- Remove five screws holding the shield cover and remove the shield cover.

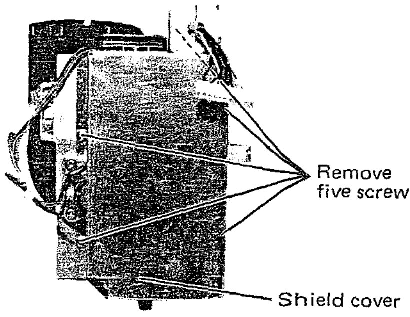

Remove
five screws
Shield cover

Fig. 3-7

4. ADJUSTMENT PROCEDURE

4-1 Connection and Setting up for Adjustment

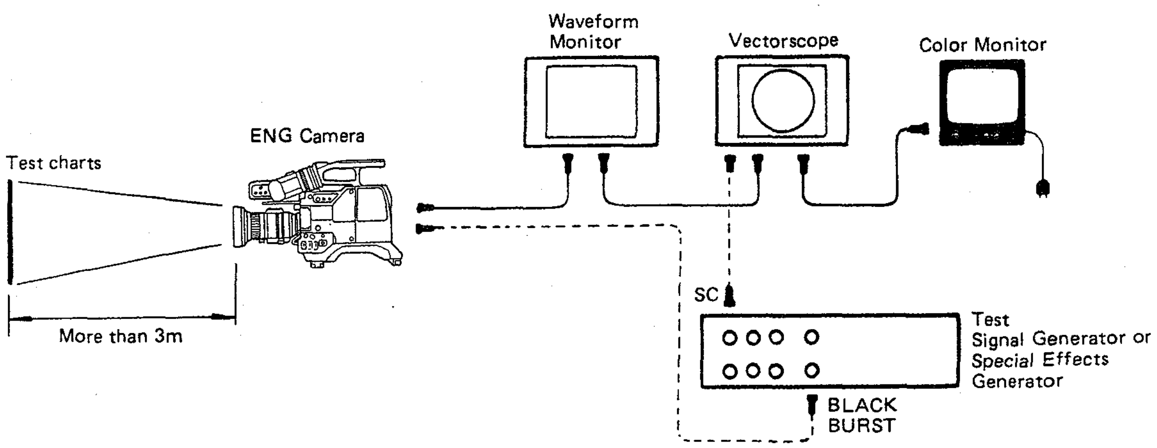


Fig. 4-1-1

Connection

- Connect the coaxial cable between the VIDEO OUTPUT connector on the right side (viewed from rear) of camera adaptor and the VIDEO INPUT connector of the waveform monitor.
- Connect the coaxial cabel between the VIDEO OUTPUT connector of the waveform monitor and the VIDEO INPUT connector of the vectorscope.
- Connect the coaxial cable between the VIDEO OUTPUT connector of the vectorscope and the VIDEO INPUT connector of the color monitor.
- Connect the coaxial cable between the VIDEO OUTPUT connector of the color monitor and the VIDEO INPUT connector of the monochrome underscanned monitor.
- Terminate the VIDEO INPUT connector of the monochrome underscanned monitor with 75 ohms.

Set up

- Turn on the camera for warming up at least 30 minutes period to adjustment.
- Distance beteween the camera and test chart should be 3m.
- Lighting : 200 footcandles (2000 lux), incident, 3200°K.

Position of Controls and Switches on the Camera

(Left Side) Viewed from rear

Filter Selection Wheel	1
High Gain Selection Switch	0 dB
Color Bar/Camera Selection Switch	BAR
White Balance Selection Switch	MANUAL
Power Switch	ON
Shutter ON/OFF Switch	OFF

(Mother board)

T PED	Center
User Set Switch	OFF
Detail Level Selection Switch	OFF
Detail Frequency Band Selection Switch	LOW
Lens Iris Control	Center
Level and Zone Indicator Switch	OFF

(Front)

Auto white/Auto Black Set Switch	HOLD
Lens Iris Selection Switch	NOR

Position of controls and switches on the camera adaptor

(Right Side) Viewed from rear

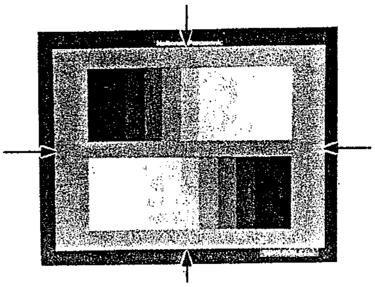
Power Selection Switch	BATT/EXT DC
VTR COMPATIBILITY SWITCH	⊕1
Earphone/Intercom Level Control	Center
Audio Level Selection Switch	20
VTR Video Output Selection Switch	ENC
Earphone Selection Switch	INT

(Lens)

Iris Control Selection Switch	M (Manual)
Servo/Manual Zoom Selection Switch	MANU

4-2 Camera adjustment

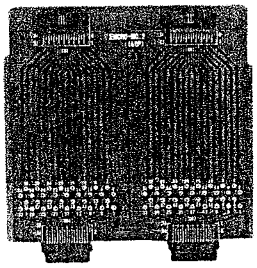
- Refer to the location of test points and Adjusting Controls.
- Aim the camera at the test chart so that the arrow heads on the test chart just touch to the four edges of the raster on the underscanned video monitor.



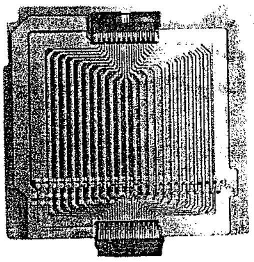
Extension board

- When adjusting the Preprocess board, Sync/Encoder board , System Control board, Digital/Process board and Power board, use the following extension board.

(YWV0FA0258AN)

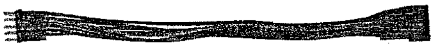


(YWV0EA0229AN)

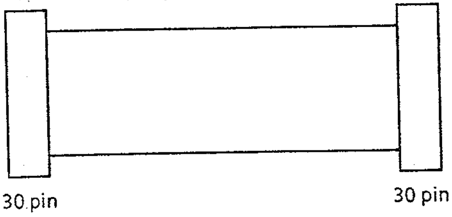


Extension cable

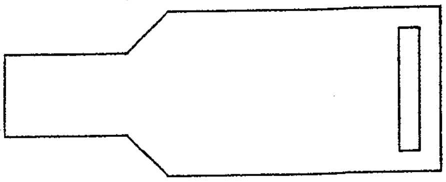
- When adjusting the Drive board, use the following extension cables.
  (YWV0EA0114AN)



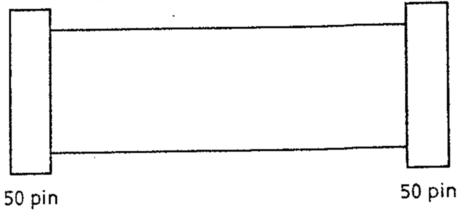
Extension Cable for Syscon Board and Digital/Process board.
(YWV03A0231AN) (2 pieces)



Flexible board for head optical assy.
(YWV03A0230AN)



Extension cable for Digital Process board.
(YWV0EA0232AN)



Power board Adjustment

(1) PD adjustment

Test point :	TP1 (GROUND)	Power board
	TP3 (PD)	Power board
Adjust :	CT1 (PD ADJ)	Power board

- Connect the digital voltmeter to TP3 (PD) on the Power board.
- Adjust CT1 (PD ADJ) for 3.5V ± 0.1V.

(2) SAW adjustment

Test point :	TP1 (GROUND)	Power board
	TP4 (SAW)	Power board
Adjust :	VR2 (SAW LEVEL)	Power board

- Connect the oscilloscope to TP4 (SAW) on the Power board.
- Adjust VR2 (SAW LEVEL) so that the signal level is 0.6V ± 0.01V.

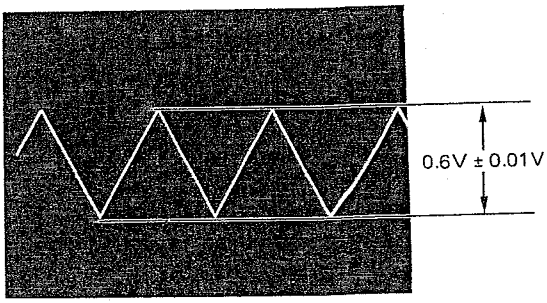


Fig. 4-2-1

(3) Vo adjustment

Test point :	TP1 (GROUND)	Power board
	TP5 (+ 4.95V)	Power board
Adjust :	VR1 (Vo ADJ)	Power board

- Connect the digital voltmeter to TP5 (+ 4.95V) on the power board.
- Adjust VR1 (Vo ADJ) for 4.95V ± 0.05V.

■ Sync/Encoder board adjustment

(4) Internal subcarrier adjustment

Test point :	TP9 (SC)	Sync/Encoder board
Adjust :	CT3 (INT)	Sync/Encoder board

- Connect the frequency counter to TP9 (SC) on the Sync/Encoder board.
- Adjust CT3 (INT) for 4.43361875 MHz ± 5 Hz.

(5) Interleaving adjustment

Test point :	TP10 (INTERLEAVING)	Sync/Encoder board
Adjust :	CT2 (INTERLEAVING)	Sync/Encoder board

- Connect the D.V.M. to TP10 (INTERLEAVING) on the Sync/Encoder board.
- Adjust CT2 (INTERLEAVING) so that the DC level of TP10 is 2.5V.

(6) R-Y/B-Y carrier balance adjustment

Test point :	Video Output Connector of Camera Adaptor	
Adjust :	VR8 (B-Y CARRIER BAL.)	Sync/Encoder board
	VR9 (R-Y CARRIER BAL.)	Sync/Encoder board
	VR11 (R-Y WHITE BAL.)	Sync/Encoder board
	VR12 (R-Y WHITE BAL.)	Sync/Encoder board
Observe :	Vectroscope	

- Set the Color Bar/ + 6 dB/Camera Selection Switch on the side of camera to BAR position.
- Increase the input gain of vectorscope.
- Adjust VR8 (B-Y CARRIER BAL.), VR9 (R-Y CARRIER BAL.), VR11 (B-Y WHITE BAL.) and VR12 (R-Y WHITE BAL.) alternately so that the center point is positioned at center of vectorscope.

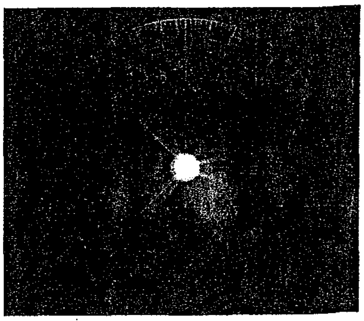


Fig.4-2-2

(7) Y gain and sync gain adjustment

Test point :	28 Pin	Extension board
Adjust :	VR7 (Y GAIN)	Sync/Encoder board
	VR18 (SYNC GAIN)	Sync/Encoder board

- Connect the oscilloscope to 28 pin on the extension board.
- Adjust VR7 (Y GAIN) so that the Y signal becomes 0.7 Vp-p.
- Adjust VR18 (Y SYNC GAIN) so that the sync signal becomes 0.3 Vp-p.

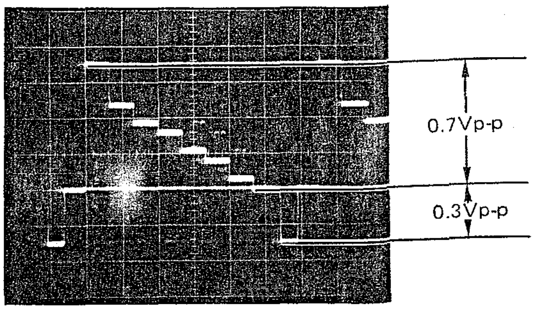


Fig. 4-2-3

(8) GAIN adjustment

Test point :	29 Pin	Extension board
Adjust :	VR10 (S-C GAIN)	Sync/Encoder board

- Connect the oscilloscope to 29 pin on the extension board.
- Adjust VR10 (S-C GAIN) so that the burst signal becomes 0.3V.

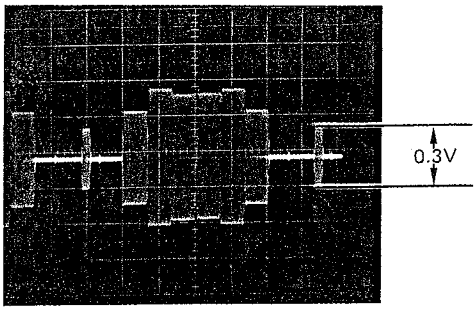


Fig. 4-2-4

(9) MII-Y GAIN, SYNC GAIN adjustment

Test point :	22 Pin	Extension board
Adjust :	VR17 (MII-Y GAIN)	Sync/Encoder board
	VR4 (SYNC GAIN)	Sync/Encoder board

- Connect the oscilloscope to 22 pin on the extension board.
- Adjust VR17 (MII-Y GAIN) so that the Y signal becomes 0.7 Vp-p.
- Adjust VR4 (SYNC GAIN) so that the sync signal becomes 0.3 Vp-p.

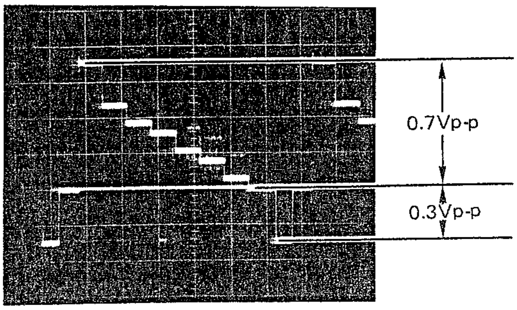


Fig. 4-2-5

(10) R-Y, B-Y Output GAIN adjustment

Test point :	24 pin (R-Y)	Extension board
	25 pin (B-Y)	Extension board
Adjust :	VR16 (R-Y OUT)	Sync/Encoder board
	VR15 (B-Y PUT)	Sync/Encoder board

- Connect the oscilloscope to 24 pin on the extension board.
- Adjust VR16 (R-Y OUTPUT) so that the R-Y signal becomes 0.525 Vp-p.

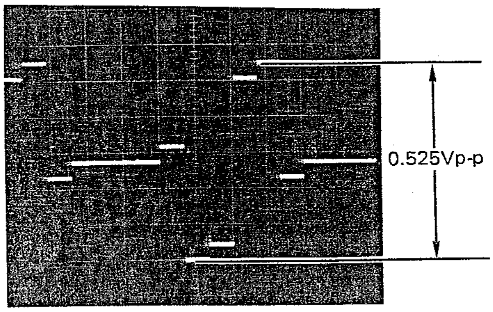


Fig. 4-2-6

- Connect the oscilloscope to 25 pin on the extension board.
- Adjust VR15 (B-Y OUTPUT) so that the B-Y signal becomes 0.525 Vp-p.

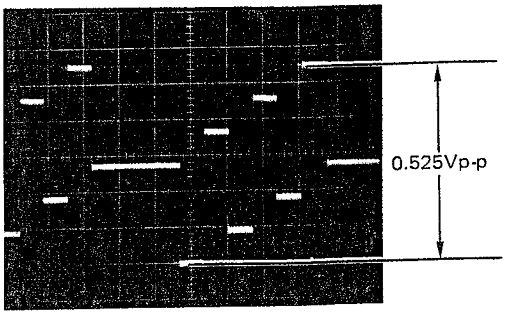


Fig. 4-2-7

(11) Color bar adjustment

Adjust :	VR2 (QUAD)	Sync/Encoder board
	VR3 (SUB QUAD)	Sync/Encoder board
	VR19 (CHROMA R-Y GAIN)	Sync/Encoder board
	VR5 (VIDEO OUTPUT GAIN)	Sync/Encoder board
	VR6 (CHROMA GAIN)	Sync/Encoder board
Observe :	Vectorscope	

- Confirm that Color Bar / ± 6 dB / Camera Selection Switch on the right side of Camera to Bar position.
- Set the VR1 (SC-H) on the Sync/Encoder board to mechanical center.
- Adjust VR2 (QUAD), VR3 (SUB QUAD), VR19 (CHROMA R-Y GAIN), VR5 (VIDEO OUTPUT GAIN) and VR6 (CHROMA GAIN) on the Sync/Encode board so that all vectors fall into their respective boxes. (Fig 4-2-8)

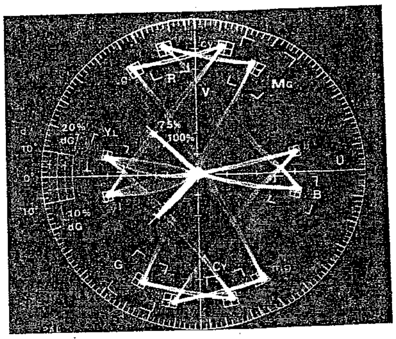


Fig. 4-2-8

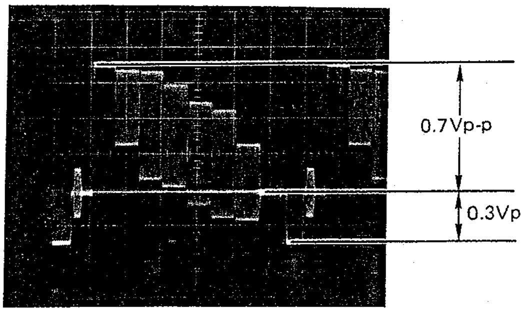


Fig. 4-2-9

(12) Burst level Adjustment

Adjust :	VR13 (BURST GAIN)	Sync/Encoder board
	VR14 (BURST PHASE)	Sync/Encorder board
Observe :	Vectorscope Waveform monitor.	

- Confirm that Color Bar / ± 6 dB / Camera Selection Switch on the right side of Camera to Bar position.
- Adjust VR13 (BURST GAIN) on the Sync/Encoder board so that the burst signal becomes 0.3 Vp-p.

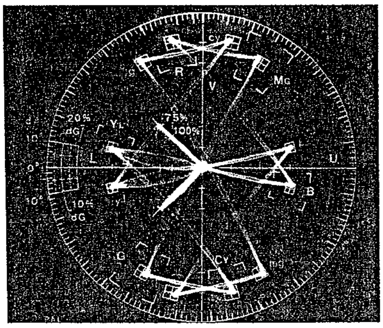


Fig. 4-2-10

- Adjust VR14 (BURST PHASE) so that the burst vectors position becomes 90° ± 1° on the vectorscope.

(13) SC/H adjustment

Test point :	Monitor Output Connector	
Adjust :	VR1 (SC-H)	Sync/Encoder board
	VR2 (QUAD)	Sync/Encoder board
	VR3 (SUB QUAD)	Sync/Encoder board
Observe :	Vectorscope	

- Confirm that Color Bar / ± 6 dB / Camera Selection Switch on the right side of camera to Bar position.
- Set the vectorscope to VECT + SC-H mode.
- Adjust VR1 (SC-H) so that the SC/H spot on the vectorscope is on the 180° ± 5° axis.

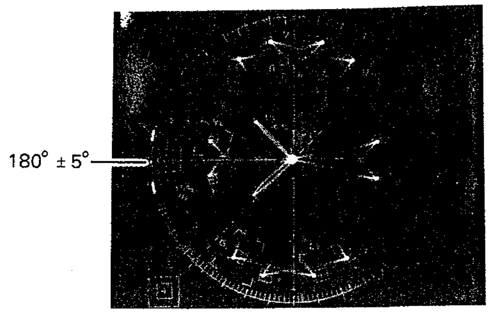
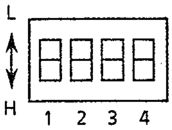


Fig. 4-2-11

- Adjust VR2 (QUAD) and VR3 (SUB QUAD) so that all vectors fall into their respective boxes.
- Confirm that the avobe adjustment is still correct or not when the Sync/Encoder board is set in the camera head.
- Confirm the H.V Blanking switch SW1 to H position.



H Blanking width : 12.0 µsec
V Blanking width : 25H

1	2	H Blanking width
L	L	11.8 µsec
H	L	11.9 µsec
H	H	12.0 µsec
L	H	12.1 µsec

3	4	V Blanking width
L	L	23H
H	L	24H
H	H	25H
L	H	26H

(14) SC Lock adjustment

Test point :	TP6 (SC LOCK)	Sync/Encoder board
Adjust :	L17 (SC LOCK-1)	Sync/Encoder board
	CT1 (SC LOCK-2)	Sync/Encoder board

- Supply the black burst signal or color bar signal to the Gen-Lock input connector of camera from T.S.G or S.E.G.
- Connect the oscilloscope to TP6 (SC LOCK) of Sync/Encoder board.
- Set the oscilloscope to DC mode.
- Adjust L17 (SC LOCK-1) so that the DC level becomes maximum.
- Adjust CT1 (SC LOCK-2) so that the DC level of TP6 is 2.3V ± 0.1V.

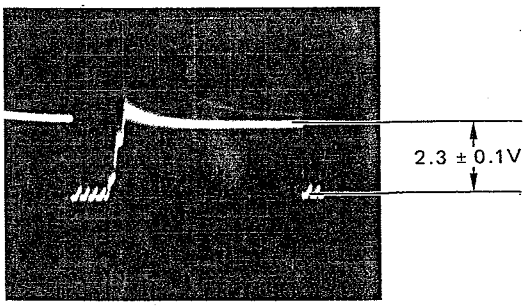


Fig. 4-2-12

Digital process board adjustment

(15) 14 MHz, 28 MHz phase adjustment

Test point :	TP6 (14 MHz-2)	Digital/Process board
	TP7 (28 MHz-2)	Digital/Process board
	TP9 (4 FSC)	Digital/Process board
	TP10 (8 FSC)	Digital/Process board
Adjust :	CT1 (14 MHz PHASE-1)	Digital/Process board
	CT2 (14 MHz PHASE-2)	Digital/Process board
	CT3 (28 MHz PHASE)	Digital/Process board

- Connect the oscilloscope CH1 to TP10 (8 FSC) and CH2 to TP9 (4 FSC).
- Adjust CT1 (14 MHz PHASE-1) so that the rise eedge phase of 4 fsc clock pulse at TP9 from rise edge of 8 fsc clock pulse at TP10 becomes 5n sec ± 1 nsec delay.
- Connect the oscilloscope CH1 to TP7 (28 MHz-2).
- Adjust CT3 (28 MHz PHASE) so that the rise edge phase of 28 MHz clock pulse at TP7 from rise edge of 4 fsc clock pulse at TP9 becomes 3 n sec ± 1 n sec delay.
- Connect the oscilloscope CH2 to TP6 (14 MHz-2).
- Adjust CT2 (14 MHz PHASE-2) so that the rise edga phase of 14 MHz clock pulse at TP6 from rise edge of 28 MHz clock pulse at TP7 becomes 5 n sec ± 1 n sec delay.

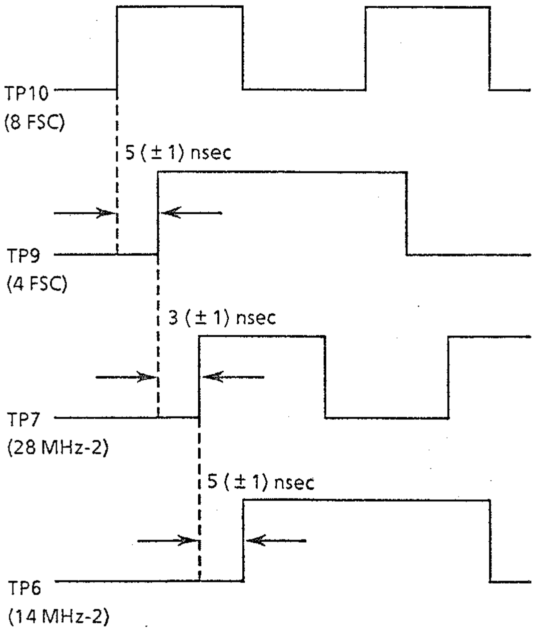


Fig. 4-2-13

(16) Corner Gate Pulse adjustment

Test point :	TP4 (VD)	Mother board
	TP13 (CORNER GATE PULSE)	Digital Process board
Adjust :	VR3 (CORNER GATE PULSE-1)	Digital Process board
	VR4 (CORNER GATE PULSE-2)	Digital Process board

- Connect the CH1 of oscilloscope to TP4 on the Mother board.
- Connect the CH2 of oscilloscope to TP13 on the Mother board.
- Adjust VR3 (CORNER GATE PULSE-1) so that the falling edge phase of Corner Gate Pulse from rise edge of VD pulse at TP4 (VD) on the Mother board becomes 6 m sec delay.
- Adjust VR4 (CORNER GATE PULSE-2) so that the width of Corner Gate Pulse becomes 6 m sec.

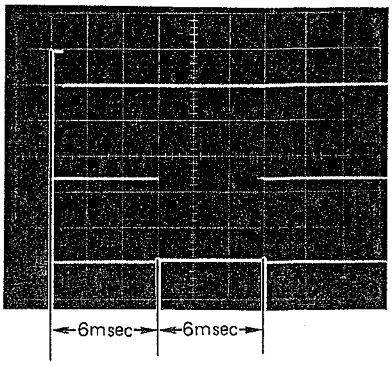


Fig. 4-2-14

Drive board Adjustment

(17) V sub adjustment

Test point :	TP4 (R Vsub)	Drive board
	TP5 (G Vsub)	Drive board
	TP6 (B Vsub)	Drive board
Adjust :	VR4 (R Vsub)	Drive board
	VR5 (G Vsub)	Drive board
	VR6 (B Vsub)	Drive board

- Set the Color Bar/+6 dB/Camera Selection Switch of camera to camera position.
- Confirm the Electric Shutter ON/OFF Switch is OFF position.
- Connect the digital voltmeter to TP5 (G Vsub) on the Drive board.
- Adjust the VR5 (G Vsub) so that voltage at TP5 (G Vsub) is equal to voltage that indicated by label on the flexible board between Drive board and Head Optical Assembly.
- Connect the digital voltmeter to TP4 (R Vsub) on the Drive board.

- Adjust the VR4 (R Vsub) so that voltage at TP4 (R Vsub) is equal to voltage that indicated by label on the flexible board between Drive board and Head Optical Assembly.
- Connect the digital voltmeter to TP6 (B Vsub) on the Drive board.
- Adjust the VR6 (B Vsub) so that Voltage at TP6 (V Vsub) is equal to voltage that indicatėd by label on the flexible board between Drive board and Head optical Assembly.

(18) VREG adjustment

Test point :	TP101 (R IN)	Preamp board
	TP201 (G IN)	Preamp board
	TP301 (B IN)	Preamp board
Adjust :	VR1 (R VXRG)	Drive board
	VR2 (G VXRG)	Drive board
	VR3 (B VXRG)	Drive board

- Connect the Drive board and Preamp board using extension cable.
- Aim the camer at the logarithmic gray scale chart.
- Set the lens iris and lighting so that saturation the CCD image sensor output.
- Connect the oscilloscope to TP201 (G IN) on the preamp board.
- Adjust VR2 (G VXRG) so that output of CCD image sensor becomes maximum of preamp board.
- Connect the oscilloscope to TP101 (R IN) of preamp board.
- Adjust VR1 (R VXRG) so that output of CCD image sensor becomes maximum.
- Connect the oscilloscope to TP301 (B IN) on the preamp board.
- Adjust VR3 (B VXRG) so that output of CCD image sensor becomes maximum.

■ Preamp board Adjustment

(19) DC Bias adjustment

Test point :	TP102 (R OUT)	Preamp board
	TP202 (G OUT)	Preamp board
	TP302 (B OUT)	Preamp board
Adjust :	VR101 (R DC Bias)	Preamp board
	VR201 (G DC Bias)	Preamp board
	VR301 (B DC Bias)	Preamp board

- Close the lens iris.
- Set the oscilloscope to H rate and DC mode.
- Turn VR102 (R WHITE CLIP), VR202 (G WHITE CLIP) and VR203 (B WHITE CLIP) on the Preamp board to fully clockwise.
- Connect the oscilloscope to TP202 (G OUT) on the preamp board.
- Adjust VR201 (G DC Bias) so that DC level from GND level becomes 0.5V.
- Connect the oscilloscope to TP102 (R OUT) on the Preamp board.
- Adjust VR101 (R DC Bias) so that DC level from GND level becomes 0.5V.
- Connect the oscilloscope to TP302 (B OUT) on the preamp board.
- Adjust VR301 (B DC Bias) so that DC level from GND level becomes 0.5V.

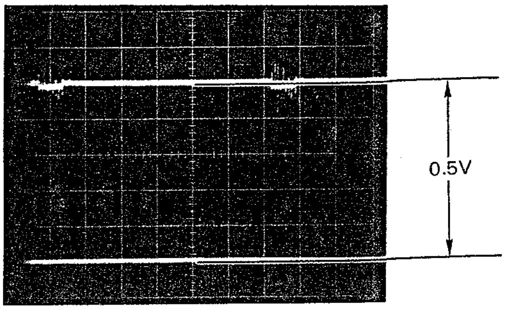


Fig.4-2-15

(20) White clip adjustment

Test point :	TP102 (R OUT)	Preamp board
	TP202 (G OUT)	Preamp board
	TP302 (B OUT)	Preamp board
Adjust :	VR102 (R WHITE CLIP)	Preamp board
	VR202 (G WHITE CLIP)	Preamp board
	VR302 (B WHITE CLIP)	Preamp board

- Aim the camera at logarithmic gray scale chart (lighting is 2000 lux, 3200°K).
- Connect the oscilloscope CH1 to TP202 (G OUT) and CH2 to TP102 (R OUT).
- Open the lens iris to saturating the signal at TP202.
- Adjust vertical level of CH2 on the oscilloscope so that the cross point of G signal at TP202 becomes same level at that cross point of R signal at TP102.

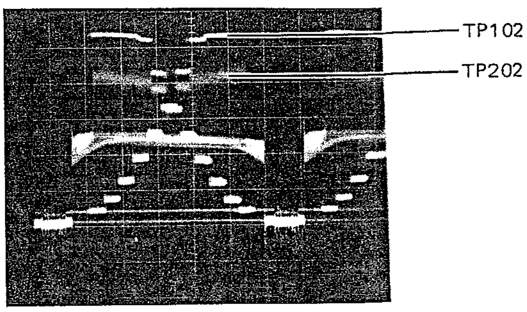


Fig. 4-2-16

- Adjust the VR102 (R WHITE CLIP) so that clip level of TP102 and saturation level of TP202 (G OUT) become coincide.
- Connect CH2 of oscilloscope to TP302 (B OUT).
- Open the lens iris to saturating the signal at TP202.
- Adjust vertical level of CH2 on the oscilloscope so that the cross point of G signal at TP202 becomes same level at that cross point of B signal at TP302.
- Adjust the VR302 (B WHITE CLIP) so that clip level of TP302 (B OUT) and saturation level of TP102 (G OUT) become coincide.

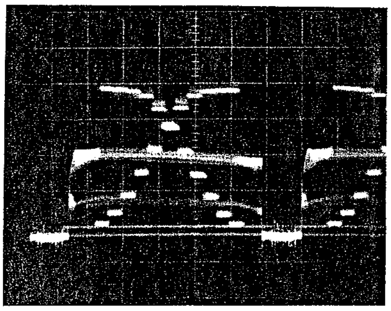
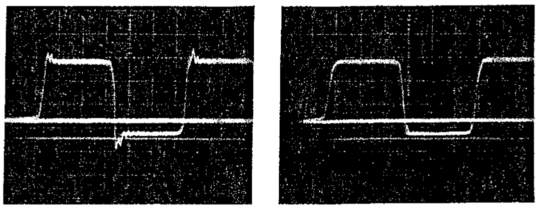


Fig. 4-2-17

(21) Preamp Frequency response adjustment

Test points :	**TP102 (R OUT)**	**Preamp board**
	TP202 (G OUT)	**Preamp board**
	TP302 (B OUT)	**Preamp board**
Adjust :	**CT101 (R FREQ)**	**Preamp board**
	CT201 (G FREQ)	**Preamp board**
	CT301 (B FREQ)	**Preamp board**

- Aim the camera at in-mega cycle chart.
- Connect the oscilloscope to TP202 (G OUT) on the preamp board.
- Expand the 0.5 MHz waveform of in-mega cycle chart using delayed sweep mode of oscilloscope.
- Adjust CT201 (G FREQ) so that decay edge and rise edge of the 0.5 MHz signal becomes right angle (no curl and no overshoot).
- Connect the oscilloscope to TP102 (R OUT) on the preamp board.
- Expand the 0.5 MHz waveform of in-mega cycle chart using delayed sweep mode of oscilloscope.
- Adjust CT101 (R FREQ) so that decay edge and rise edge of the 0.5 MHz signal becomes right angle (no curl and no overshoot).
- Connect the oscilloscope to TP302 (B OUT) on the preamp board.
- Expand the 0.5 MHz waveform of in-mega cycle chart using delayed sweep mode of oscilloscope.
- Adjust CT301 (B FREQ) so that decay edge and rise edge of the 0.5 MHz signal becomes right angle (no curl and no overshoot).



NO GOOD GOOD

Fig. 4-2-18

■ Preprocess board Adjustment

Prior to adjusting the pre process board, switches and controls should be set as follows unless instructed otherwise.

Position of control and switches.

(Front)	
• Lens Iris Control	NOR
(Right side)	
• High Gain Selection Switch	0 dB
• White Balance Selection switch	MANUAL
• Color Bar/ + 6 dB/Camera Selection Switch	CAMERA
• Filter Selection Wheel	1 (3200K)
(Mother board)	
• Electronic Shutter On/Off Swith (SW11)	OFF
• Scene File Selection Switch (SW10)	1
• Level and Zone Indicator Switch (SW9)	OFF
• User Set Switch (SW2)	OFF
• Detail Frequency Band Selection Switch (SW3)	OFF
• Detail Level Selection Switch (SW4)	OFF
• Lens Iris Control (VR4)	Mechanical center
• Total Pedestal Level Control (VR3)	Mechanical center

○ IMPORTANT NOTICE

Preset the memory in the System Control board Procedure indicator below and do not set the Auto White and Auto Black Balance set switch (AWC, ABC) on the front panel throughout the adjustment.

- Set the user set Switch to 1 or 2 position.
- Confirm the selected NO.1 INITIAL SET.
- Set the arrow to "NKEE" by Item Switch SW7 on the Mother board.
- Set the "KNEE" to OFF by Down Switch SW5 on the Mother board.
- Set the arrow to "WHITE CLIP" by Item Switch SW7.
- Set the "WHITE CLIP" to OFF by Down Switch SW5.
- Set the User Set Switch to OFF position.
- Short TP1 (RESET-1) and TP2 (GROUND) on the System Control board for approximately one second.
- Short TP3 (RESET-2) and TP4 (GRROUND) on the System Control board for approximately one second.

(22) IRIS Set

Test point :	**TP201 (G IN)**	**Preamp board**
Adjust :	**Lens Iris**	**Camera**

- Aim the camera at the logarithmic gray scale chart. (lighting : 2000 Lux, 3200°K)
- Connect the oscilloscope to TP201 on the preamp board.
- Adjust Lens Iris (MAN) so that signal level become 200 mVp-p.

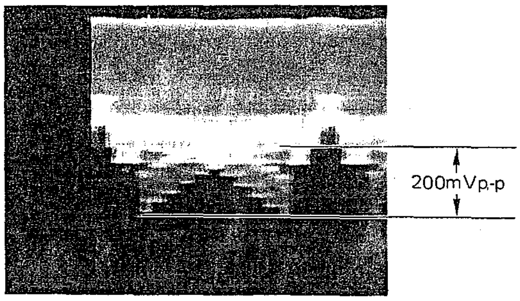


Fig.4-2-19

(23) Pulse cancel coarse adjustment

Test point :	**TP102 (R PREVIDEO)**	**Preprocess board**
	TP302 (G PREVIDEO)	**Preprocess board**
	TP501 (B PREVIDEO)	**Preprocess board**
Adjust :	**VR109 (R PULSE CANCEL)**	**Preprocess board**
	VR309 (G PULSE CANCEL)	**Preprocess board**
	VR509 (B PULSE CANCEL)	**Preprocess board**

- Cap on the Lens.
- Connect the oscilloscope to TP302 (G PREVIDEO) on preporcess board.
- Adjust VR309 (G PULSE CANCEL) so that center of signal level become 0 mV.
- Connect the oscilloscope to TP102 (R PREVIDEO) on the preprocess board.
- Adjust VR109 (R PULSE CANCEL) so that center of signal level become 0 mV.
- Connect the oscilloscope to TP501 (B PREVIDEO) on preprocess board.
- Adjust VR509 (B PULSE CANCEL) so that center of signal level become 0 mV.

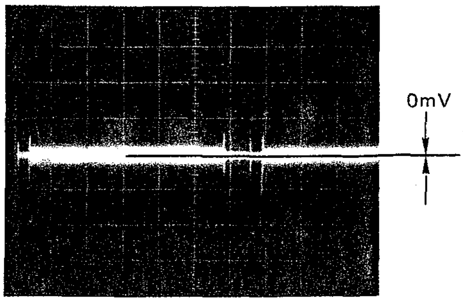


Fig. 4-2-20

(24) Input Gain adjustment

Test point :	**TP102 (R PREVIDEO)**	**Preprocess board**
	TP302 (G PREVIDEO)	**Preprocess board**
	TP502 (B PREVIDEO)	**Preprocess board**
Adjust :	**VR101 (R INPUT GAIN)**	**Preprocess board**
	VR301 (G INPUT GAIN)	**Preprocess board**
	VR501 (B INPUT GAIN)	**Preprocess board**

- Aim the camera at the logarithmic gray scale chart (lighting is 2000 lux. 3200°K).
- Connect the oscilloscope to TP302 (G PREVIDEO) on the Preprocess board.
- Adjust the VR301 (G INPUT GAIN) so that the G signal level becomes 0.7 Vp-p.
- Connect the oscilloscope to TP102 (R PREVIDEO) on the Preprocess board.
- Adjust the VR101 (R INPUT GAIN) so that the R signal level becomes 0.7 Vp-p.
- Connect the oscilloscope to TP502 (B PREVIDEO) on the Preprocess board.
- Adjust the VR501 (B INPUT GAIN) so that the B signal levvel becomes 0.7 Vp-p.

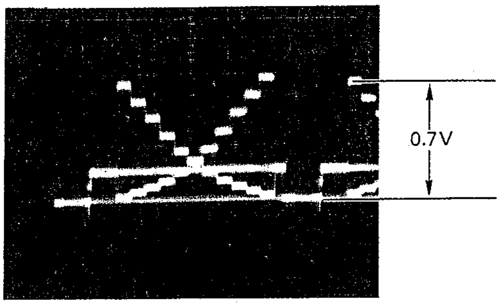


Fig. 4-2-21

(25) Pedestal coarse adjustment

Test point :	TP104 (R GAIN)	Preprocess board
	TP304 (G GAIN)	Preprocess board
	TP504 (B GAIN)	Preprocess board
Adjust :	VR108 (R PEDESTAL)	Preprocess board
	VR308 (G PEDESTAL)	Preprocess board
	VR508 (B PEDESTAL)	Preprocess board

- Cap on the lens.
- Connect the oscilloscope to TP304 (G GAIN) on the preprocess board.
- Adjust the VR308 (G PEDESTAL) so that the pedestal level becomes 10 ± 5 mV.
- Connect the oscilloscope to TP104 (R GAIN) on the Preprocess board.
- Adjust the VR108 (R PEDESTAL) so that the pedestal level becomes 10 ± 5 mV.
- Connect the oscilloscope to TP504 (B GAIN) on the preporcess board.
- Adjust the VR508 (B PEDESTAL) so that the pedestal level becomes 10 ± 5 mV.

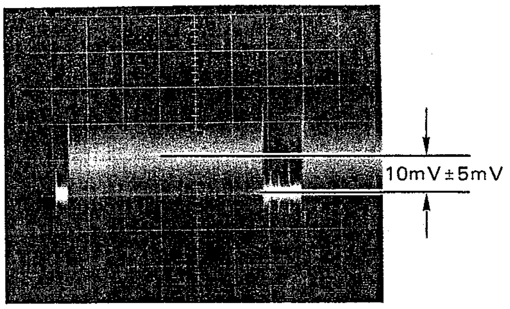


Fig.4-2-22

(26) Gain adjustment

Test point :	TP104 (R GAIN)	Preprocess board
	TP304 (G GAIN)	Preprocess board
	TP504 (B GAIN)	Preprocess board
Adjust :	VR104 (R GAIN)	Preprocess board
	VR304 (G GAIN)	Preprocess board
	VR504 (B GAIN)	Preprocess board

- Aim the camera at the logarithmic gray scale chart (lighting is 2000 lux, 3200°K).
- Connect the oscilloscope to TP304 (G GAIN) on the preprocess board.
- Adjust the VR304 (G GAIN) so that the G signal level becomes 0.7 Vp-p.
- Connect the oscilloscope to TP104 (R GAIN) on the preprocess board.
- Adjust the VR104 (R GAIN) so that the R signal level becomes 0.7 Vp-p.
- Connect the oscilloscope to TP504 (B GAIN) on the preprocess board.
- Adjust the VR504 (B GAIN) so that the B signal level becomes 0.7 Vp-p.

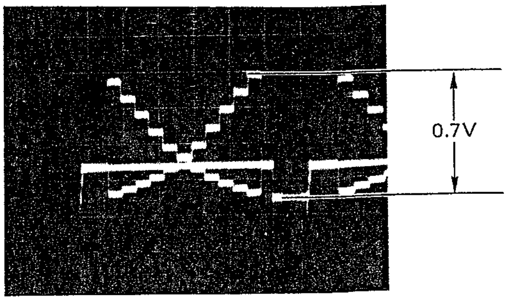


Fig.4-2-23

(27) Gamma balance adjustment

Test point :	TP105 (R GAMMA)	Preprocess board
	TP305 (G GAMMA)	Preprocess board
	TP505 (B GAMMA)	Preprocess board
Adjust :	VR105 (R GAMMA BAL)	Preprocess board
	VR305 (G GAMMA BAL)	Preprocess board
	VR505 (B GAMMA BAL)	Preprocess board

- Aim the camera at the logarithmic gray scale chart (lighting is 2000 lux, 3200°K).
- Connect the oscilloscope to TP305 (G GAMMA) on the pre process board.
- Adjust the VR305 (G GAMMA BAL) so that the signal level becomes 0.7 Vp-p.
- Connect the oscilloscope to TP105 (R GAMMA) on the pre process board.
- Adjust the VR105 (R GAMMA BAL) so that the signal level becomes 0.7 Vp-p.
- Connect the oscilloscope to TP505 (B GAMMA) on the pre process board.
- Adjust the VR505 (B GAMMA BAL) so that the signal level becomes 0.7 Vp-p.

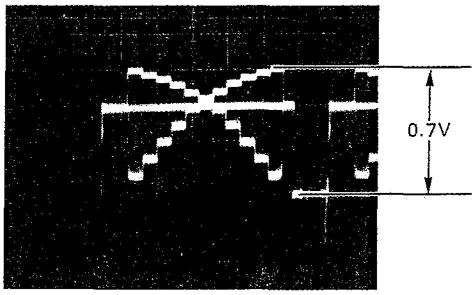


Fig. 4-2-24

(28) Preprocess Output adjustment

Adjust :	VR106 (R GAMMA)	Preprocess board
	VR306 (G GAMMA)	Preprocess board
	VR506 (B GAMMA)	Preprocess board
	VR107 (R OUTPUT GAIN)	Preprocess board
	VR307 (G OUTPUT GAIN)	Preprocess board
	VR507 (B OUTPUT GAIN)	Preprocess board
	VR108 (R PEDESTAL)	Preprocess board
	VR308 (G PEDESTAL)	Preprocess board
	VR508 (B PEDESTAL)	Preprocess board
	VR109 (R PULSE CANCEL)	Preprocess board
	VR309 (G PULSE CANCEL)	Preprocess board
	VR509 (B PULSE CANCEL)	Preprocess board
Observe :	Waveform Monitor Vectorscope	

- Aim the Camera at logarithmic gray scale chart (lighting is 2000 lux, 3200°K).
- Adjust VR306 (G GAMMA), VR106 (R GAMMA) and VR506 (B GAMMA) so that gamma cross point level becomes 0.4V.
- Adjust VR307 (G OUTPUT GAIN), VR107 (R OUTPUT GAIN), and VR507 (B OUTPUT GAIN) so that the video signal level becomes 0.7V.

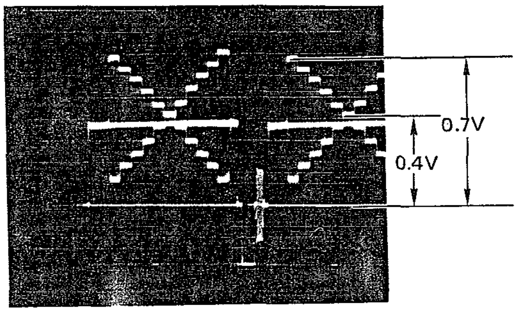


Fig. 4-2-25

- Cap on the lens.
- Adjust VR308 (G PEDESTAL), VR108 (R PEDESTAL) VR508 (B PEDESTAL) so that the pedestal level becomes 0.035V.
- Set the High Gain Selection Switch to + 18 dB position.
- Adjust VR309 (G PULSE CANCEL) VR109 (R PULSE CANCEL), and VR509 (B PULSE CANCEL) so that pedestal level becomes 0.035V.

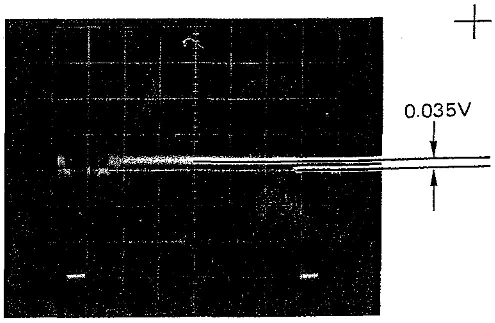


Fig.4-2-26

(29) Shutter Pulse Cancel Adjustment

Test point :	Video output connector
Adjust :	VR110 (R SHUTTER PULSE CANCEL) VR310 (G SHUTTER PULSE CANCEL) VR510 (B SHUTTER PULSE CANCEL)

- Cap on the lens.
- Set the electronic shutter on/off switch to ON position.
- Set the electronic shutter speed selection switch to 1/500 position.
- Set the high gain selection switch to + 18 dB position.
- Adjust VR310 (G SHUTTER PULSE CANCEL) VR110 (R SHUTTER PULSE CANCEL), and VR510 (G SHUTTER PULSE CANCEL) so that the pedestal level is not varied (stayed in the same level) while changing the shutter ON/OFF switch.

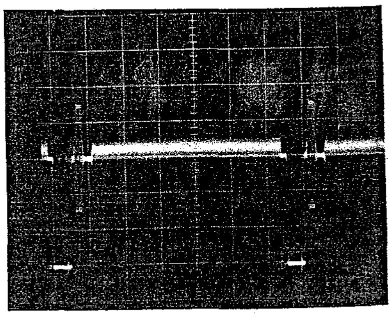


Fig. 4-2-27

- Reset the High Gain Selection switch to 0 dB and Electronic shutter ON/OFF Switch to OFF position.

(30) KNEE POINT Adjustment

Test point :	TP106 (R OUTPUT)	Preprocess board
	TP306 (G OUTPUT)	Preprocess board
	TP506 (B OUTPUT)	Preprocess board
Adjust :	VR111 (R KNEE POINT)	Preprocess board
	VR311 (G KNEE POINT)	Preprocess board
	VR511 (B KNEE POINT)	Preprocess board

- Aim the camera at logarithmic gray scale chart (lighting is 2000 lux, 3200°K).
- Set the scene File Selection switch to 1 position.
- Set the user set switch to 1 or 2.
- Set the cursor to "KNEE" line by Item switch.
- Set the mode to "MAN" by Down switch.
- Set the cursor to WHITE CLIP to "ON" by Down switch.
- Set the user set switch to OFF.
- Connect the oscilloscope to TP306 (G OUT) on the Preprocess board.
- Open the lens iris so that the knee level at TP306 (G OUT) becomes 0.67V.
- Adjust VR311 (G KNEE POINT) so that the starting point of the knee level becomes 0.69V.
- Connect the oscilloscope to TP106 (R OUT) on the preprocess board.
- Adjust VR111 (R KNEE POINT) so that the starting point of the knee level becomes 0.69V.
- Connect the oscilloscope to TP506 (B OUT) on the preprocess board.
- Adjust VR511 (B KNEE POINT) so that the starting point of the knee level becomes 0.69V.

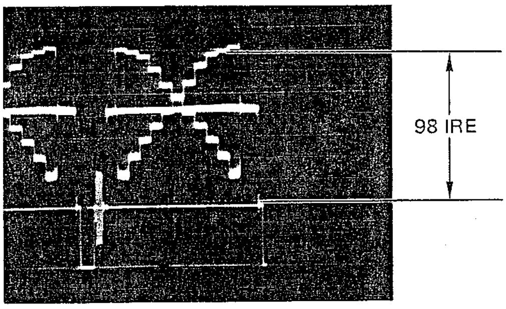


Fig. 4-2-28

(31) White shading balance adjustment

Test point :	TP106 (R OUTPUT)	Preprocess board
	TP306 (G OUTPUT)	Preprocess board
	TP506 (B OUTPUT)	Preprocess board
Adjust :	VR112 (R W. SHD)	Preprocess board
	VR312 (G W. SHD)	Preprocess board
	VR512 (B W. SHD)	Preprocess board

- Cap on the lens
- Set the scene File Selection Switch to 1 position.
- Set the User set switch to 1 or 2.
- Select the page switch to No. 3.
- Select the Item switch to WHITE SHD and Up switch to ON.
- Change the data "WHITE SHD" to "TEST" by executing AWC while pressing the Data input switch SW1 on the System control board.
- Connect the oscilloscope to TP 306 (G OUT) on the preprocess board.
- Adjust VR312 (G W. SHD) so that signal becomes minimum.
- Connect the oscilloscope to TP 106 (R OUT) on the preprocess board.
- Adjust VR112 (R W. SHD) so that signal becomes minimum.
- Connect the oscilloscope to TP 506 (B OUT) on the preprocess board.
- Adjust VR512 (B W. SHD) so that signal becomes minimum.

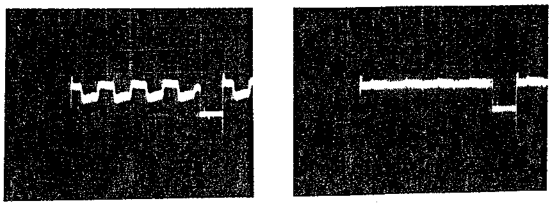

NO GOOD GOOD

Fig. 4-2-29

(32) Frequency response adjustment

Test point :	TP104 (R GAIN)	Preprocess board
	TP304 (G GAIN)	Preprocess board
	TP504 (B GAIN)	Preprocess board
Adjust :	CT101 (R FREQ RESPONSE)	Preprocess board
	CT301 (G FREQ RESPONSE)	Preprocess board
	CT501 (B FREQ RESPONSE)	Preprocess board

- Set the filter wheel to 1 (3200°K) position.
- Aim the camera at the in-mega cycle chart.
- Connect the oscilloscope to TP104 (R GAIN).
- Set the oscilloscope at H rate.
- Adjust CT101 (R FREQ RESPONSE) so that the waveform from 0.5 MHz to 6 MHz becomes flat as much as possible.

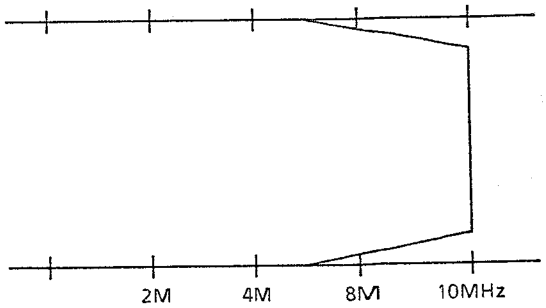


Fig. 4-2-30

- Connect the oscilloscope to TP304 (G GAIN).
- Adjust CT301 (G FREQ RESPONSE) so that the waveform from 0.5 MHz to 6 MHz becomes flat as much as possible.
- Connect the oscilloscope to TP504 (B GAIN).
- Adjust CT501 (B FREQ RESPONSE) so that the waveform from 0.5 MHz to 6 MHz becomes flat as much as possible.

(33) Iris Gain adjustment

Test point : VIDEO PUTOUT connector
Adjust : VR1 (IRIS GAIN) Preprocess board
VR2 (ANTI CLOSE) Preprocess board
VR4 (IRIS LEVEL) Mother board
Observe : Video Monitor

Position of controls and switches.
(Front)
- Filter Selection Whell .... "1"

(Right Side) Viewed from front
- High Gain Selection Switch .... "0 dB"
- Electronic Shutter ON/OFF Switch .... "OFF"
- User set Switch .... "1 or 2"

(Lens)
- Iris Control Selection Switch .... "AUTO"

- Aim the camera at logarithmic gray scale chart (lighting is 2000 lux, 3200°K).
- Observe the viewfinder and select the No. 2 INITIAL SET by page switch. Set the "IRIS P/A" to "PEAK" and "IRIS GATE" to "1/3 CUT".
- Set the user set switch to OFF.
- Set VR1 (IRIS GAIN) on the preprocess board to fully clockwise.
- Adjust VR4 (IRIS LEVEL) on the Mother board so that the monitor output signal level becomes 0.7V.
- Repeat adjusting VR1 on the preprocess board and VR4 on the Mother board so that waveform level becomes 0.7V and there is no hunting.
- Adjust VR2 (ANTI CLOSE) does not hunt when change the gain to + 24 dB.
- Confirm that the lens iris opens by 1/2 F step when the lens iris Selection switch is set to 1/2 open position.
- Confirm that the lens iris closes by 1/2F step when the lens iris Selection swithc is set to 1/2 close position.

(34) Auto BLK SHD adjustment

- Cap on the lens.
- Set the Scene File selection switch to 1 and user set switch to 1 or 2.
- Observe the viewfinder and select the No. 3 INITIAL SET by page switch.
- Confirm the "BLACK SHD" line is selected.
- Execute the ABC while pressing the Auto white and Auto Black Balance set switch and confirm the data is changing to ACTIVE, blinking Auto Warning Indicator (Green) on the viewfinder screen.
- Confirm completion of ABC set and data of BLACK SHD is changing to ON.
- Set the User set swithc to OFF position.

(35) Battery warning adjustment

Test point : 10-12 pin (+ 12V IN) Power board.
31-33 pin (GROUND)
Adjust : VR5 (BATTERY WARNING LEVEL) Mother board
Observe : 1.5 Electronic viewfinder

- Connect the (+) of D.V.M to Pin 10-12 (+ 12V IN) and (-) of D.V.M to Pin 31-33.
- Adjust DC power supply so that the DC voltage at pin 10-12 become + 10.6V.
- Turn VR5 (BATTERY WARNING LEVEL) fully clockwise and turn it back slowly and stop it when the indicator starts blinking of battery warning indicator in the Electoric viewfinder.

(36) Auto Black Control adjustment

Adjust : SW1 (DATA INPUT SWITCH) System Control board
SW8 (PAGE SWITCH) Mother board
SW6 (UP SWITCH) Mother board
SW5 (DOWN SWITCH) Mother board
Observe : Vectorscope
Waveform Monitor

- Confirm the Electronic Shutter Switch is set to OFF position and High Gain Selection Switch to 0 dB position.
- Set the White Balance Selection switch to AWC A position.
- Aim the camera at logarithmic gray scale chart (lighting is 2000 lux, 3200°K).
- Set the Iris Control Selection Switch of Lens to M (Manual) position and Adjust Lens iris so that the Video signal level of Waveform Monitor becomes 0.63V.
- Excute the AWC.
- Cap on the Lens.

<1> Execute the ABC while pressing the Data Input Switch SW1 on the System Control board and confim the screen of viewfinder is changing to ABC ADJ mode.
<2> Set the R ch by Page Switch SW8.
<3> Adjust up switch SW6 and Down Svvitch SW5 so that the vector positions at center of vectorscope.

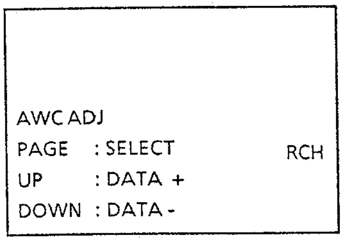
<4> Set the B ch by Page Switch SW8.
<5> Adjust Up switch SW6 and Down Switch SW5 so that the vector positions at center of vectorscope.
<6> Push the Data Input Switch SW1 on the System Control board.
<7> Execute the ABC while pressing the Check Button on the Mother board.
<8> Execute the ABC while pressing the Recording Time Reset Button on the Mother board.
<9> Repeat the procedure <1> ~ <6> again.
<10> Execute the ABC (pressing more than 3 seconds).
<11> Repeat the procedure <8> again.

(37) Auto White Control Adjustment

Adjust :	**SW1 (DATA INPUT SWITCH)**	**System Control board.**
	SW8 (PAGE SWITCH)	**Mother board**
	SW6 (UP SWITCH)	**Mother board**
	SW5 (DOWN SWITCH)	**Mother board**
Observe :	**Waveform monitor**	
	Vectorscope	

- Aim the camera at logarithmic gray scale chart (lighting is 2000 lux 13200°K).
- Confirm the Electric Shutter Switch is set to OFF position and High Gain Selection Switch is set to 0 dB position.
- Set the White Balance Selection Switch to AWC A position and Filter Selection Wheel to 1 position.

<1> Set the lens iris so that the waveform level becomes 0.63V.
<2> Execute the AWC
<3> Execute the AWC while pressing Data Input Switch SW1 on the System Control board and confirm EVF screen indicate to ADJ mode.



AWC ADJ
PAGE : SELECT RCH
UP : DATA +
DOWN : DATA -

<4> Adjust Up Switch SW6 and Down Switch SW5 on the Mother board so that the vector positions at center of vectroscope and push Data Input Switch SW1 on the System Control board when finished this adjustment.
<5> Set the Electric Shutter Switch, High Gain Selection Switch according to the table below and execute AWC.

Note : Keep the video output level for 0.63V by lens iris.

Color Bar/ +6dB/ Camera Selection Switch	High Gain Selection Switch	Gain (dB)	Electronic Shutter					
			OFF	1/120	1/250	1/500	1/1000	1/2000
CAM	0 dB	0 dB	-	1	2	3	4	5
+6 dB	0 dB	+6 dB	6	7	8	9	10	11
CAM	+9 dB	+9 dB	12	13	14	15	16	17
+6 dB	+9 dB	+15 dB	18	19	20	21	22	23
CAM	+18 dB	+18 dB	24	25	26	27	28	29
+6 dB	+18 dB	+24 dB	30	31	32	33	34	35

■ Adjustment procedure of auto scan by Remote Control Box (RCB)

- Connect the RCB Cable between Remote Control Unit Extension connector on the RCB and RCB Connector on the left side of Camera.
- Turn ON the RCB Operation Switch on the RCB.
- Set the Iris Control Selection Switch of lens to A position.
- Set the Lens Iris Selection Switch on the front of Camera to 1/2 CLOSE position.
- Execute the AWC while pressing Recording Time Reset Button SW1 on the Setup board of Camera.

Note : If stop the auto scan, turn off the RCB Operation Switch on the RCB to BAR position.

(38) Flare adjustment

Adjust :	**SW1 (DATA INPUT SWITCH)**	**System Control board**
	SW5 (DOWN SWITCH)	**Mother board**
	SW6 (UP SWITCH)	**Mother board**
	SW7 (ITEM SWITCH)	**Mother board**
	SW8 (PAGE SWITCH)	**Mother board**
	SW9 (USER SET SWITCH)	**Mother board**
	SW10 (SCENE FILE SELECTION SWITCH)	**Mother board**
	SW14 (CHECK BUTTON)	**Mother board**

- Aim the camera at logarithmic gray scale chart (Lighting is 2000 lux 3200°K).
- Set to arrow to "FLARE" by Item Switch SW7 on the Mother board and set to ON.
- Set the lens iris so that the video output level becomes 0.7V and not the F (A).
- Open 2F lens iris from (A).
- Set the Scene File Selection Switch SW10 on the Mother board to 1 position.

- Set the User Set Switch SW9 on the Mother board to 1 position while pressing the Data Input Switch SW1 on the System Control board.
- Select the USER SET MENU 3 by Page Switch SW8 on the Mother board.
- Set the arrow to "FLARE GREEN" by Item Switch SW7 on the Mother board.
- Adjust data by Up Switch SW6 and Down Switch SW5 on the Mother board so that the carrier leak on the lowest step on gray scale becomes minimum.

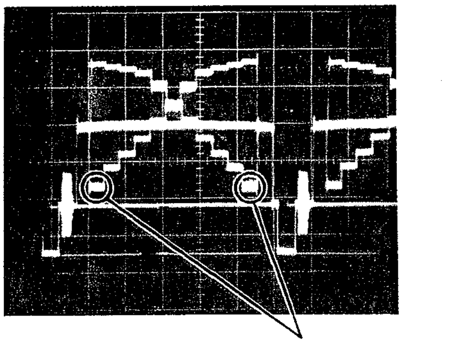


Fig. 4-2-31

- Set the arrow to "FLARE RED" by Item Switch SW7.
- Adjust data by Up Switch SW6 and Down Switch SW5 so that the carrier leak on the lowest step of gray scale becomes minimum.
- Set the arrow to "FLARE BLUE" by Item Switch SW7.
- Adjust data by Up Switch SW6 and Down Switch SW5 so that the carrier leak on the lowest Step of gray scale becomes minimum.
- Repeat the adjustment of GREEN, RED and BLUE of FLARE so that the carrier leak on the lowest step of gray scale becomes minimum.
- Set the User Set Switch SW9 to OFF position.
- Set the Scene File Selection Switch to USER position.
- Turn OFF the Power Switch of Camera.
- Turn ON the Power Switch while pressing the Check Button SW14 on the Mother board and confirm Electronic Viewfinder screen indicate to follows.

RESET USER A?
YES : UP SW
NO : DOWN SW

- Push the Up Switch SW6.

Note : If not push the Down Switch SW5 or Up Switch SW6 about 10 seconds, reset the camera mode.

- Set the Scene File Selection Switch SW10 to 1 position..
- Set the Scene File Selection Switch SW10 to USER position while pressing Check Button SW14.
- Turn OFF the Power Switch of Camera.
- Turn ON the Power Switch of Camera while pressing the Check Button SW14 on the Mother board and confirm Electronic Viewfinder screen indicate to follows.

RESET USER B?
YES : UP SW
NO : DOWN SW

- Push the Up Switch SW6.

(39) Anti close adjustment

Adjust : **VR2 (ANTI CLOSE)** **Preprocess board**
Observe : **Video monitor**

- Set the lens iris control switch to AUTO position.
- Aim the camera at the halogen lamp.
- Adjust VR2 (ANTI CLOSE) on preprocess board so that Lens iris becomes F16.
- Cap on the lens.
- Confirm that the lens iris becomes F16 when the cap is taken off the lens.
- If not readjust VR2 again.

4-3 Camera Adaptor Adjustment

- The camera must be completely aligned before camera Adaptor adjustment is made.
- Remove nine screws which hold side cover, connector angle and remove side cover, connector angle.

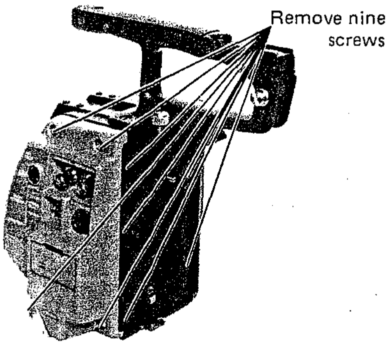


Fig. 4-3-1

- Set the connector angle to camera head.

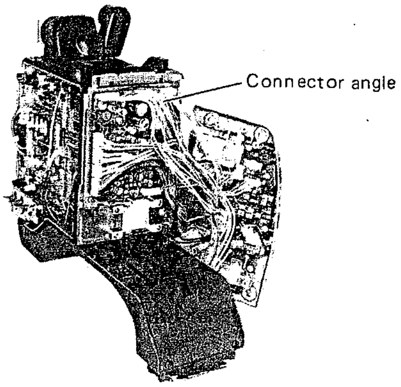


Fig. 4-3-2

Position of Controls and switches on the camera
(Right side) viewed from front

- Color Bar/± 6 dB/Camera Selection Switch ..... BAR
- Power switch .... ON

(Right side of camera adaptor) viewed from rear

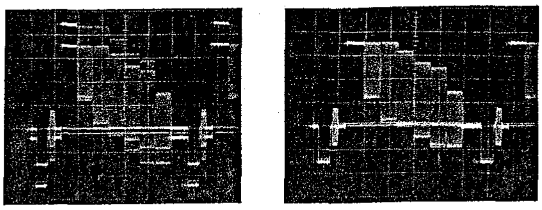
- SIGNAL SELECTION 1 Switch .... ENC
- POWER SELECTION switch .... BATT/EXT DC

■ Video board Adjustment

(1) Video output level adjustment

Test point: Video Output Connector (Camera Adaptor)
Monitor Output Connector (Camera)
Adjust: VR10 (VIDEO LEVEL) Video board

- Connect the oscilloscope CH1 to Video Output Connector of camera adaptor and CH2 to Monitor Output Connector of camera.
- Adjust VR10 (VIDEO LEVEL) so that the video signal level at Video Output Connector of camera adaptor becomes same level as video signal at Monitor Output Connector of Camera.



NO GOOD GOOD

Fig 4-3-3

(2) Y out (S-VHS) adjustment

Test point: Pin 3 of CN7 Video board
Adjust: VR9 (S-VHS Y ADJ) Video board

- Connect the oscilloscope to Pin 3 of CN7 on the Video board with 75 ohms termination.
- Adjust VR9 (S-VHS Y ADJ) so that the luminance (Y) signal level becomes 0.7V ± 0.007V.

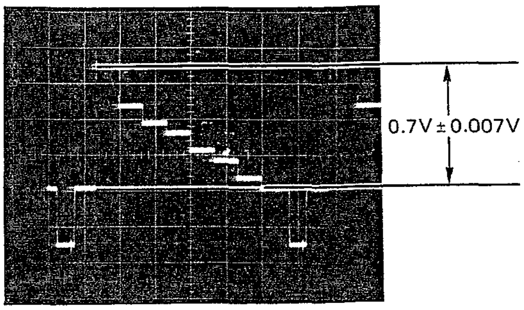


Fig 4-3-4

(3) C out (S-VHS) adjustment

Test point :	Pin 2 of CN3	Video board
Adjust :	VR8 (S-VHS C ADJ)	Video board

- Connect the oscilloscope to Pin 2 of CN3 on the Video board with 75 ohms termination.
- Adjust VR8 (S-VHS C ADJ) so that the chrominance (C) signal level becomes 0.03 ± 0.007V.

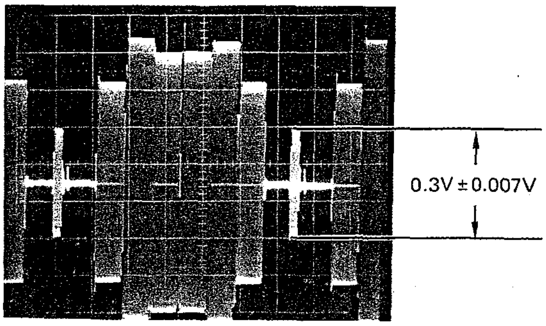


Fig 4-3-5

(4) Y out (MII) adjustment

Test point :	Pin 3 of CN2	Video board
Adjust :	VR6 (MII Y ADJ)	Video board

- Set the SIGNAL SELECTION 1 switch on the right side of camera adaptor to SELECT 2 position .
- Set the SIGNAL SELECTION 2 switch to Y/PR/PB position.
- Connect the oscilloscope to Pin 3 of CN2 on the Video board with 75 ohms termination.
- Adjust VR6 (MII Y ADJ) so that the Y signal level becomes 0.7V ± 0.007V.

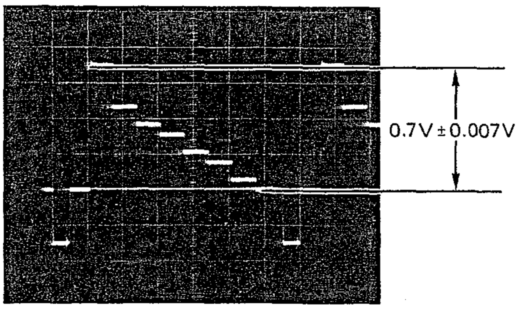


Fig 4-3-6

(5) P_R (R-Y) out adjustment

Test point :	Pin 1 of CN2	Video board
Adjust :	VR2 (R-Y ADJ)	Video board

- Confirm the SIGNAL SELECTION 2 Switch on the right side of camera adaptor to Y/PR/PB position.
- Connect the oscilloscope to Pin 1 of CN2 on the Video board with 75 ohms termination.
- Adjust VR4 (R-Y) so that the signal level becomes 0.525V ± 0.01V.

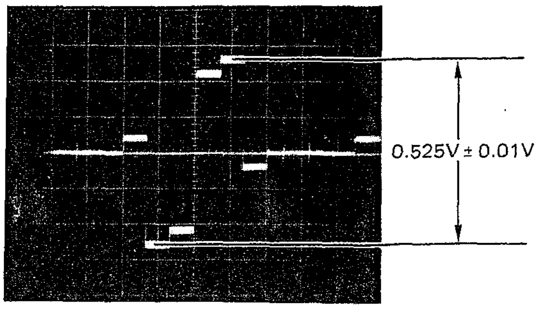


Fig 4-3-7

(6) P_B (B-Y) out adjustment

Test Point :	Pin 7 of CN2	Video board
Adjust :	VR4 (B-Y ADJ)	Video board

- Confirm the RCU/VTR Signal Selection Switch on the right side of camera adaptor to Y/PB/PR position.
- Connect the oscilloscope to Pin 7 of CN2 on the Video board with 75 ohms termination.
- Adjust VR4 (B-Y ADJ) so that the signal level becomes 0.525V ± 0.01V.

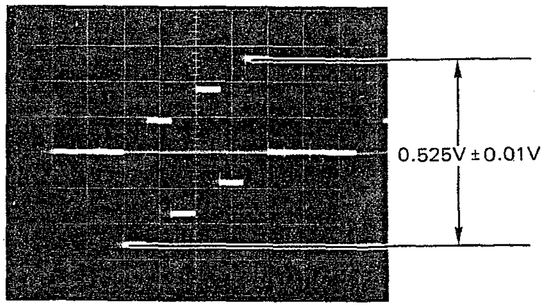


Fig 4-3-8

(7) G out adjustment

Test point :	Pin 3 of CN2	Video board
Adjust :	VR7 (G LEVEL)	Video board

- Set the SIGNAL SELECTION 1 switch to SELECT 2 position.
- Set the SIGNAL SELECTION 2 switch to R/G/B position.
- Connect the oscilloscope to Pin 3 of CN2 on the Video board with 75 ohms termination.
- Adjust VR7 (G LEVEL) so that the white portion of video signal level becomes 0.7V ± 0.01V.

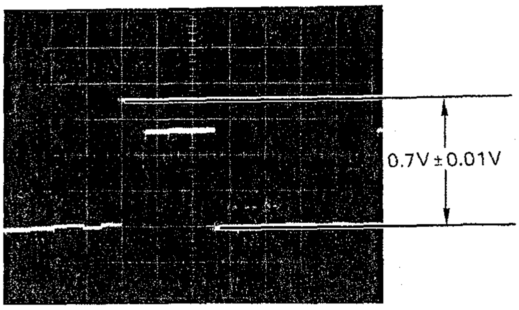
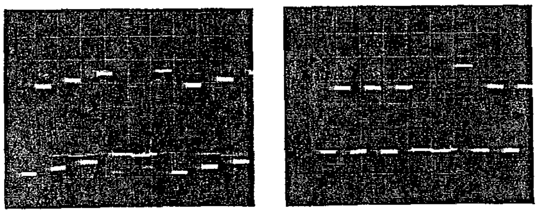


Fig 4-3-9

(8) R out adjustment

Test point :	Pin 1 of CN2	Video board
Adjust :	VR3 (R LEVEL)	Video board

- Confirm the SIGNAL SELECTION 2 switch to R/G/B position.
- Connect the oscilloscope to Pin 1 of CN2 on the Video board with 75 ohms termination.
- Adjust VR3 (R LEVEL) so that the video signal level becomes flat level.



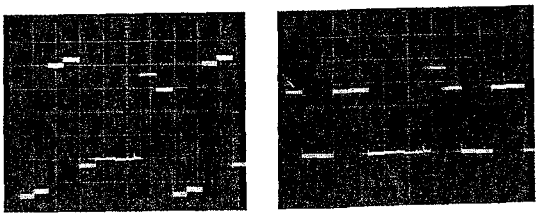
NO GOOD GOOD

Fig 4-3-10

(9) B out adjustment

Test point :	Pin 7 of CN2	Video board
Adjust :	VR5 (B LEVEL)	Video board

- Confirm the SIGNAL SELECTION 2 switch to R/G/B position.
- Connect the oscilloscope to Pin 7 of CN2 on the Video board with 75 ohms termination.
- Adjust VR5 (B LEVEL) so that the video signal level becomes flat level.

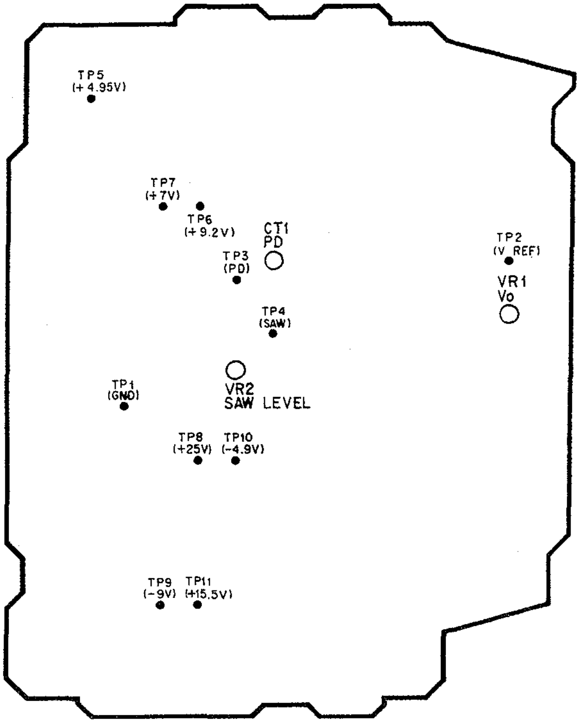


NO GOOD GOOD

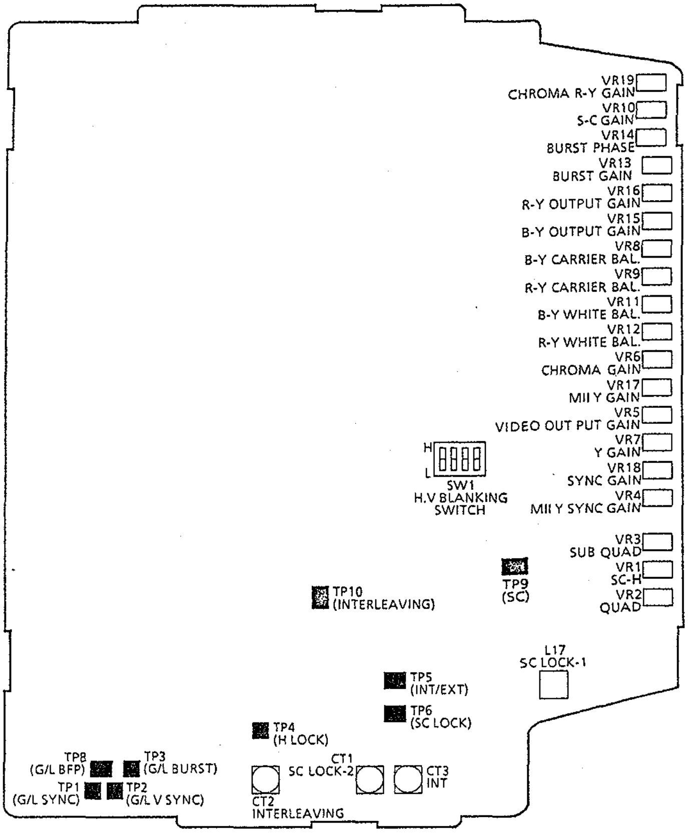
Fig. 4-3-11

5. LOCATION OF TEST POINTS AND ADJUSTING CONTROLS

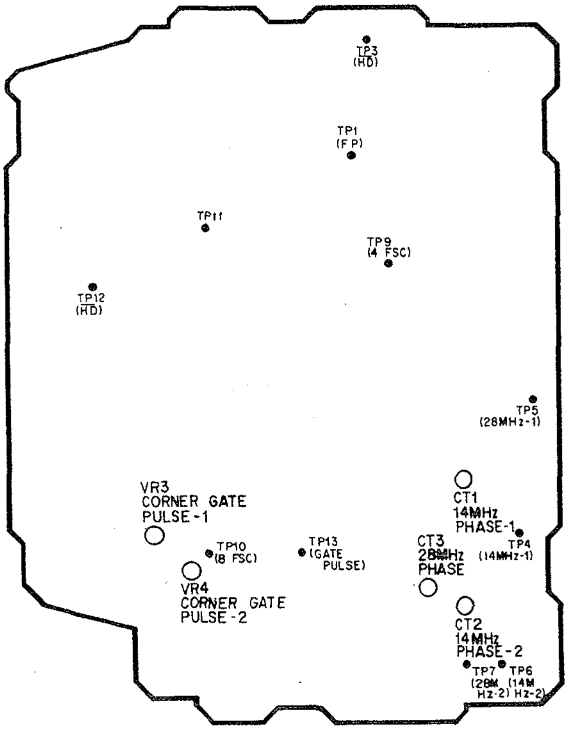
POWER BOARD


TP5
(+4.95V)
TP7
(+7V)
TP6
(+9.2V)
CT1
PD
TP3
(PD)
TP2
(V REF)
VR1
Vo
TP4
(SAW)
TP1
(GND)
VR2
SAW LEVEL
TP8
(+25V)
TP10
(-4.9V)
TP9
(-9V)
TP11
(+15.5V)

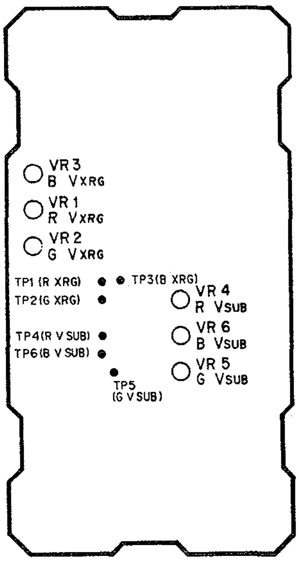
SYNC/ENCODER BOARD (COMPONENT SIDE)


VR19
CHROMA R-Y GAIN
VR10
S-C GAIN
VR14
BURST PHASE
VR13
BURST GAIN
VR16
R-Y OUTPUT GAIN
VR15
B-Y OUTPUT GAIN
VR8
B-Y CARRIER BAL.
VR9
R-Y CARRIER BAL.
VR11
B-Y WHITE BAL.
VR12
R-Y WHITE BAL.
VR6
CHROMA GAIN
VR17
MII Y GAIN
VR5
VIDEO OUT PUT GAIN
VR7
Y GAIN
VR18
SYNC GAIN
VR4
MII Y SYNC GAIN
H
L
SW1
H.V BLANKING
SWITCH
VR3
SUB QUAD
VR1
SC-H
VR2
QUAD
TP9
(SC)
TP10
(INTERLEAVING)
L17
SC LOCK-1
TP5
(INT/EXT)
TP6
(SC LOCK)
TP4
(H LOCK)
TP8
(G/L BFP)
TP3
(G/L BURST)
TP1
(G/L SYNC)
TP2
(G/L V SYNC)
CT1
SC LOCK-2
CT3
INT
CT2
INTERLEAVING

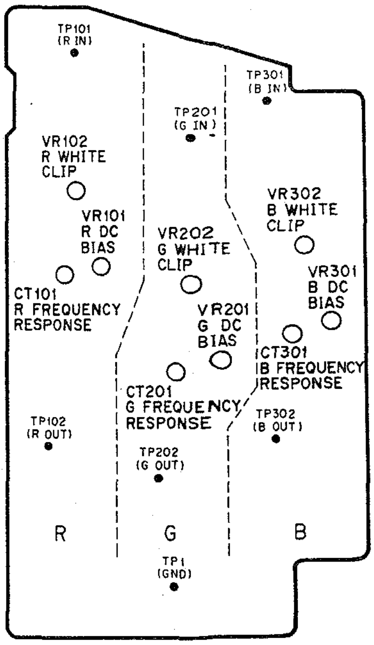
DIGITAL PROCESS BOARD


TP3
($\overline{HD}$)
TP1
(F P)
TP11
TP9
(4 FSC)
TP12
($\overline{HD}$)
TP5
(28MHz-1)
VR3
CORNER GATE
PULSE-1
CT1
14MHz
PHASE-1
TP10
(8 FSC)
TP13
(GATE
PULSE)
CT3
28MHz
PHASE
TP4
(14MHz-1)
VR4
CORNER GATE
PULSE-2
CT2
14MHz
PHASE-2
TP7
(28M
Hz-2)
TP6
(14M
Hz-2)

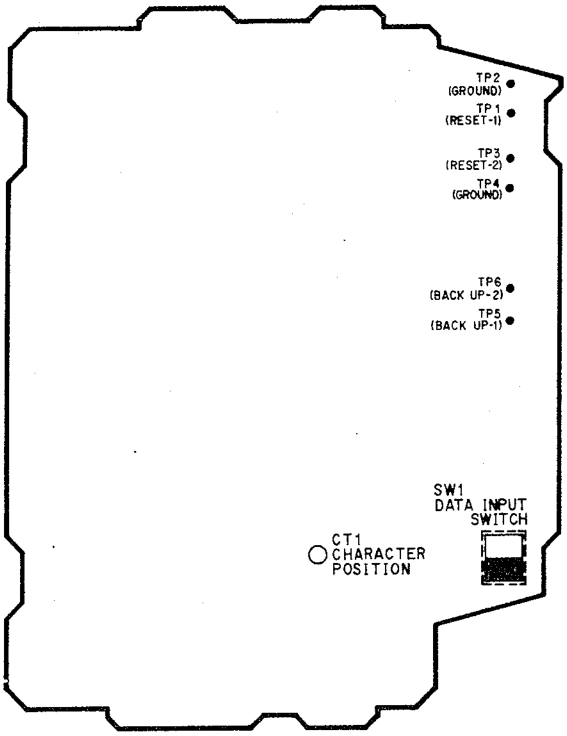
DRIVE BOARD


VR3
B VXRG
VR1
R VXRG
VR2
G VXRG
TP1 (R XRG)
TP3 (B XRG)
TP2 (G XRG)
VR 4
R VSUB
TP4 (R V SUB)
VR 6
B VSUB
TP6 (B V SUB)
VR 5
G VSUB
TP5
(G V SUB)

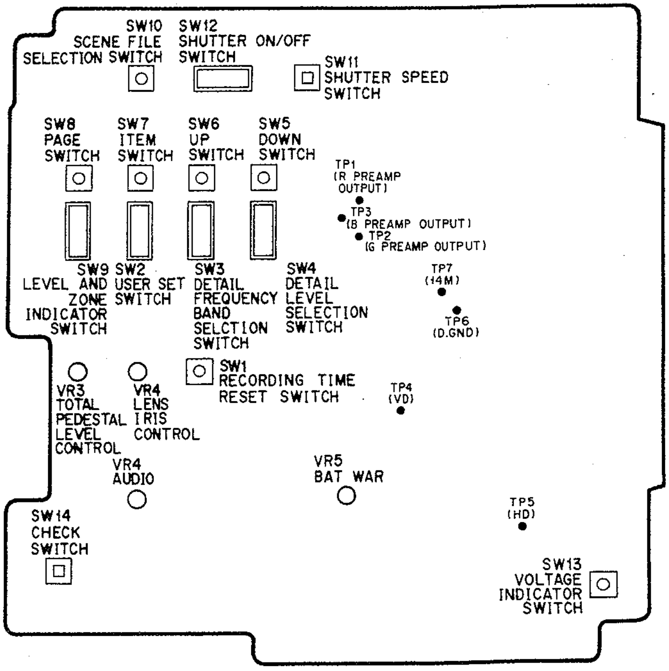
PREAMP BOARD


TP101
(R IN)
TP301
(B IN)
TP201
(G IN)
VR102
R WHITE
CLIP
VR302
B WHITE
CLIP
VR101
R DC
BIAS
VR202
G WHITE
CLIP
VR301
B DC
BIAS
CT101
R FREQUENCY
RESPONSE
VR201
G DC
BIAS
CT301
B FREQUENCY
RESPONSE
CT201
G FREQUENCY
RESPONSE
TP102
(R OUT)
TP302
(B OUT)
TP202
(G OUT)
R
G
B
TP1
(GND)

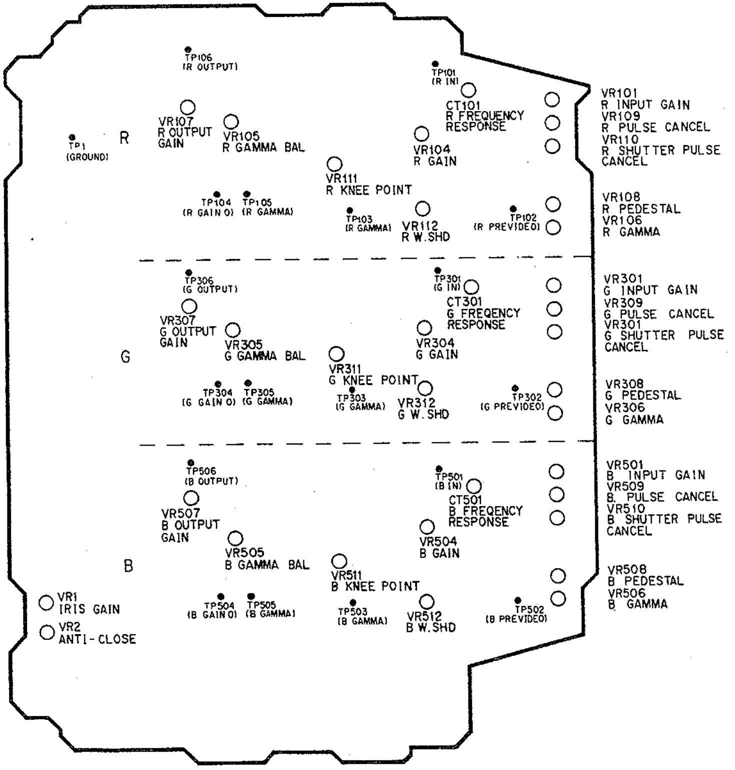
SYSTEM CONTROL BOARD


TP2 (GROUND)
TP1 (RESET-1)
TP3 (RESET-2)
TP4 (GROUND)
TP6 (BACK UP-2)
TP5 (BACK UP-1)
SW1 DATA INPUT SWITCH
CT1 CHARACTER POSITION

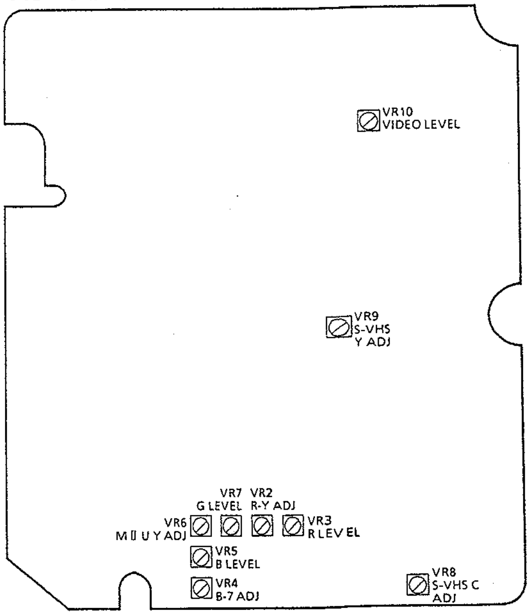
MOTHER BOARD


SW10 SCENE FILE SELECTION SWITCH
SW12 SHUTTER ON/OFF SWITCH
SW11 SHUTTER SPEED SWITCH
SW8 PAGE SWITCH
SW7 ITEM SWITCH
SW6 UP SWITCH
SW5 DOWN SWITCH
TP1 (R PREAMP OUTPUT)
TP3 (B PREAMP OUTPUT)
TP2 (G PREAMP OUTPUT)
SW9 LEVEL AND ZONE INDICATOR SWITCH
SW2 USER SET SWITCH
SW3 DETAIL FREQUENCY BAND SELCTION SWITCH
SW4 DETAIL LEVEL SELECTION SWITCH
TP7 (14M)
TP6 (D.GND)
SW1 RECORDING TIME RESET SWITCH
TP4 (VD)
VR3 TOTAL PEDESTAL LEVEL CONTROL
VR4 LENS IRIS CONTROL
VR4 AUDIO
VR5 BAT WAR
TP5 (HD)
SW14 CHECK SWITCH
SW13 VOLTAGE INDICATOR SWITCH

PRE PROCESS BOARD


TP106 (R OUTPUT)
TP101 (R IN)
CT101 R FREQUENCY RESPONSE
VR107 R OUTPUT GAIN
VR105 R GAMMA BAL
TP1 (GROUND)
R
VR104 R GAIN
VR111 R KNEE POINT
TP104 (R GAIN 0)
TP105 (R GAMMA)
TP103 (R GAMMA)
VR112 R W.SHD
TP102 (R PREVIDEO)
VR101 R INPUT GAIN
VR109 R PULSE CANCEL
VR110 R SHUTTER PULSE CANCEL
VR108 R PEDESTAL
VR106 R GAMMA
TP306 (G OUTPUT)
TP301 (G IN)
CT301 G FREQENCY RESPONSE
VR307 G OUTPUT GAIN
VR305 G GAMMA BAL
G
VR304 G GAIN
VR311 G KNEE POINT
TP304 (G GAIN 0)
TP305 (G GAMMA)
TP303 (G GAMMA)
VR312 G W.SHD
TP302 (G PREVIDEO)
VR301 G INPUT GAIN
VR309 G PULSE CANCEL
VR301 G SHUTTER PULSE CANCEL
VR308 G PEDESTAL
VR306 G GAMMA
TP506 (B OUTPUT)
TP501 (B IN)
CT501 B FREQENCY RESPONSE
VR507 B OUTPUT GAIN
VR505 B GAMMA BAL
B
VR504 B GAIN
VR511 B KNEE POINT
VR1 IRIS GAIN
VR2 ANTI-CLOSE
TP504 (B GAIN 0)
TP505 (B GAMMA)
TP503 (B GAMMA)
VR512 B W.SHD
TP502 (B PREVIDEO)
VR501 B INPUT GAIN
VR509 B. PULSE CANCEL
VR510 B SHUTTER PULSE CANCEL
VR508 B PEDESTAL
VR506 B GAMMA

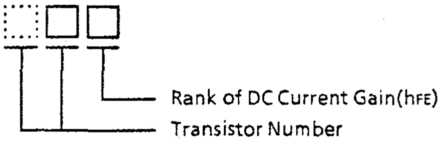
VIDEO BOARD


VR10 VIDEO LEVEL
VR9 S-VHS Y ADJ
VR7 G LEVEL
VR2 R-Y ADJ
VR6 MIU Y ADJ
VR3 R LEVEL
VR5 B LEVEL
VR4 B-7 ADJ
VR8 S-VHS C ADJ

CHIP COMPONENTS

1. Chip Transistor

The transistor number is indicated on the top surface of the chip transistor using two alphabet letters or one numerical and two alphabet letters.


Rank of DC Current Gain(hFE)
Transistor Number

Transistor Number

(Chip Transistor)

Letter	Transistor No.	Letter	Transistor No.
A	2SB709	X	2SD602A
B	2SB709A	Y	2SD601
C	2SB710	Z	2SD601A
D	2SB710A	1A	2SB799
E	2SA1022	1B	2SB814
F	2SA1034	1C	2SB902
H	2SA1035	1F	2SK321
I	2SB792	1K	2SK316
K	2SC2778	1L	2SK247
P	2SD814	1M	2SJ84
Q	2SD813	1N	2SK199
R	2SC2480	1O	2SK198
S	2SC2405	1T	2SC3077
T	2SC2406	1X	2SC2845
U	2SC2404	1Z	2SD1030
V	2SC2295	2B	2SK374
W	2SD602	2C	2SK116

(Small Chip Transistor)

Letter	Transistor No.
A	2SB1218
U	2SC3931
W	2SD1820
Y	2SD1819
E3	2SA1226
OS	2SB1219
UC	2SA1532
YU	2SC3938

(Pair Transistor)

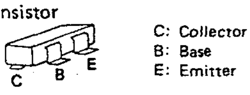
Letter	Transistor No.
5C	XN4601
5N	XN6501
5O	XN6401

Example :

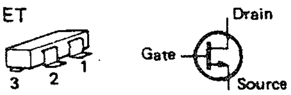
WQ ——→ 2SD602 - Q
YQ ——→ 2SD601 - Q
1BS ——→ 2SB814 - S

Appearance and Symbols

Transistor


C
B
E
C: Collector
B: Base
E: Emitter

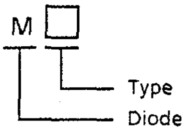
FET


3
2
1
Drain
Gate
Source

	1	2	3
Except 2SK199	Drain	Source	Gate
2SK199	Gate	Drain	Source

2. Chip Diode

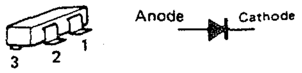
The diode number is indicated on the top surface of the chip diode using Two alphabet letters.


M
Type
Diode

Diode Number

Letter	Diode No.	Letter	Diode No.
MA	MA151A	MI	MA152K
MB	MA152A	MK	MA28W-B
MC	MA153	ML	MA28T-A
MD	MA28-A	MN	MA151WA
ME	MA28-B	MO	MA152WA
MF	MA28W-A	MT	MA151WK
MH	MA151K	MU	MA152WK

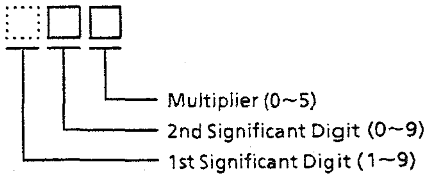
Appearance and Symbols


3
2
1
Anode
Cathode

	1	2	3
MA28/MA28W/MA28T	-	Anode	Cathode
MA151K/MA152K	-	Anode	Cathode
MA151A/MA152A	-	Cathode	Anode
MA151WK/MA152WK	Anode	Anode	Cathode
MA151WA/MA152WA	Cathode	Cathode	Anode
MA153	Cathode	Anode	Common

3. Chip Resistor

The resistor value is indicated on the bottom surface of the chip resistor using three digit numbers.


Multiplier (0~5)
2nd Significant Digit (0~9)
1st Significant Digit (1~9)

Example :

330 ——→ $33 \times 10^0 = 33$ ohms
561 ——→ $56 \times 10^1 = 560$ ohms
123 ——→ $12 \times 10^3 = 12$ ohms

Note : Zero ohm resistor (jumper chip) is colored red or green.

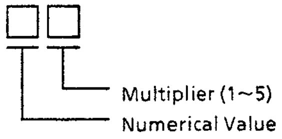
4. Chip Capacitor

The capacitive value of replacement chip capacitors is indicated on the bottom surface. Original parts do not have value indication.

If the capacitive value is less than 100 pF, the value will be indicated by one or two digit number expressing the capacity directly in pF.

Example :
0.5 → 0.5 pF
75 → 0.75 pF
1 → 1 pF
2.5 → 2.5 pF
33 → 33 pF
82 → 82 pF

If the capacitive value is 100 pF or greater, the value will be indicated by an alpha-numeric code. The letter precedes the number and expresses a numerical value to be multiplied by the number which follows.



Numerical Value

Letter	Value	Letter	Value
A	10	N	33
B	11	P	36
C	12	Q	39
D	13	R	43
E	15	S	47
F	16	T	51
G	18	U	56
H	20	V	62
J	22	W	68
K	24	X	75
L	27	Y	82
M	30	Z	91

*Letters I and O are not used

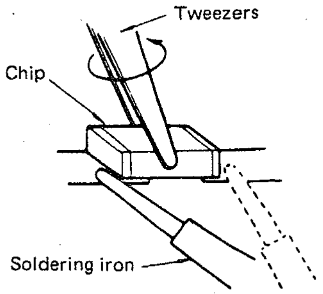
Example :
A1 → 10 x 10^1 = 100 pF
N2 → 33 x 10^2 = 3300 pF
S3 → 47 x 10^3 = 47000 pF

5. Precautions in replacing the chip component

1. Make sure that the unit is turned OFF when replacing the chip.
2. Use tweezers to prevent any damage to the chip surface.
3. Do not re-use the chips after removal.
4. Do not rub the electrode of chips.
5. Do not subject the chips to excessive stress.
6. It is recommended that a pencil-type soldering iron to be used.
7. The solder whose diameter is less than 0.5 mm is recommended.
8. Do not heat the chip beyond 3 seconds.
9. Maintain temperature control under 260°C (500°F) when soldering.

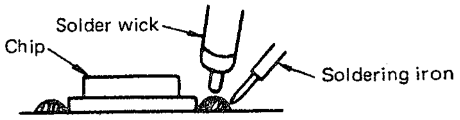
5-1 Removal (Transistor, Diode, Resistor and Capacitor)

1. Add the solder to both ends of the chip (three leads for chip transistor).
2. While attaching the soldering iron to both ends of the chip (three leads for chip transistor) as shown below, remove the chip by turning it with tweezers.
   Note : Be careful not to damage other chips.

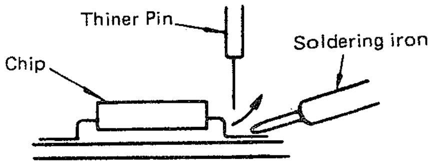


5-2 Removal (IC)

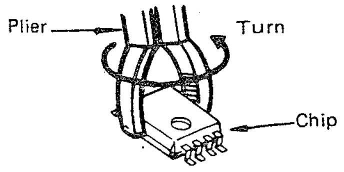
1. Add the solder wick and solder iron to each lead of the IC and remove solder.



2. Add the solder iron to each lead of the IC and left each lead of the IC using thiner pin.

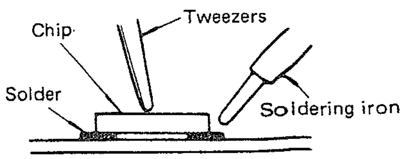


3. Remove IC turning it with plier.

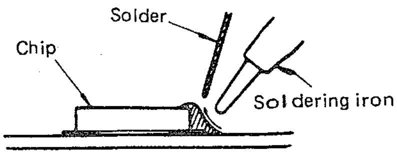


5-3 Mounting

1. Place the solder thinly on the chip mounting foil.
2. Solder the chip temporarily while holding the chip with the tweezers.



3. Solder both ends of chip (three leads for chip transistor).



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Service Manual

Colour Video Camera
WV-F500E Series

Vol. 3

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Schematic Diagrams
Conductor Views
Wiring Diagrams

Vol. 3

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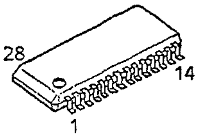
Panasonic

APPEARANCE OF IC, TRANSISTOR AND DIODE

YWM27C512F42
YW43256G15LL



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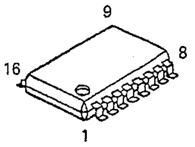

YWM51957BFP
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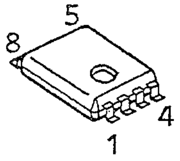

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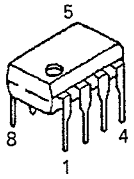

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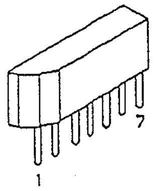

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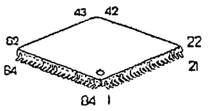
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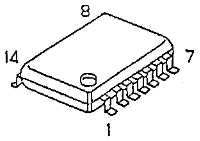

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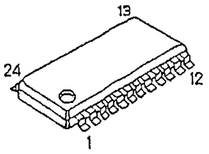

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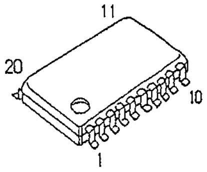

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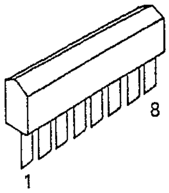

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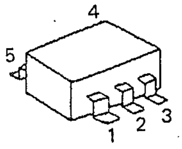

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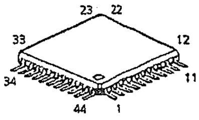
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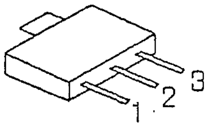

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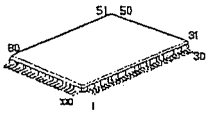
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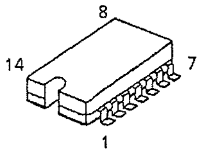

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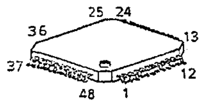
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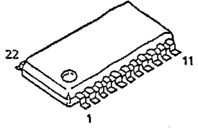

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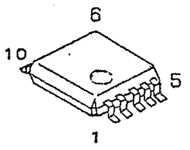

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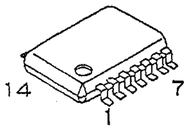

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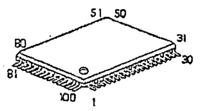
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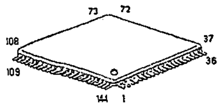
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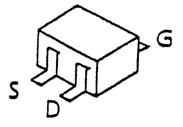
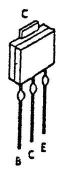
APPEARANCE OF IC, TRANSISTOR AND DIODE

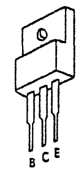
2SK662-PQR



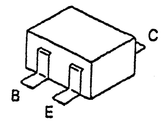
2SJ132



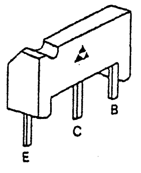
2SA1329



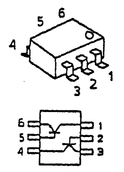
2SA1034-ST
2SA1462
2SA1532-CD
2SB710-QRS
2SB1218-QRS
2SB1218A-QR
2SB1219-QRS
2SC3735
2SC3931-CD
2SD1819-QRS
2SD1820PQRS
2SD1823-RS
2SD1979



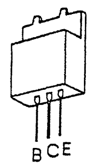
2SD661-TU



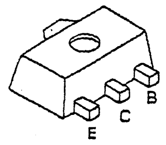
UMZ1


5 6
4
3 2 1
6
5
4
1
2
3

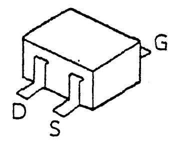
2SA1244Y
2SC3074Y



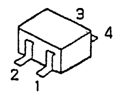
2SB956-RS



2SK1109

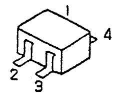


3SK157



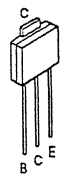
1. Substrate
2. Gate
3. Source
4. Drain

NJL5803KF1

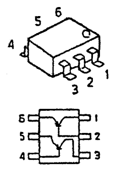


1. A
2. Output
3. Vcc
4. GND

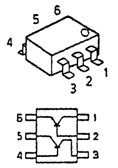
2SA1615-LK
2SB1176-PQ



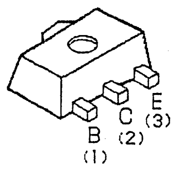
UMT2
XN6435


5 6
4
3 2 1
6
5
4
1
2
3

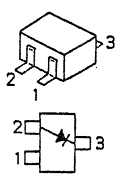
UMX2


5 6
4
3 2 1
6
5
4
1
2
3

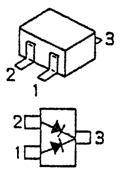
2SB766-RS
2SB766A-QR
2SB1073PQR
2SD874-RS
2SD874A-RS



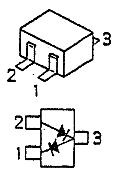
MA141K



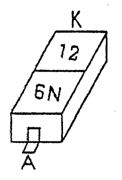
MA141WK



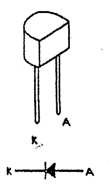
MA144
MA153



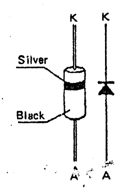
VO3C



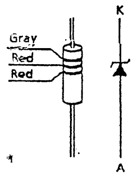
YWFC51M23
YWFC54M5



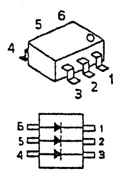
YWERA81004
YWERB83004


K K
Silver
Black
A A

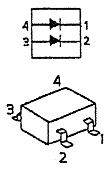
MA4082M


Gray
Red
Red
K
A

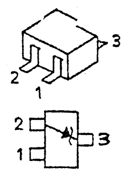
MA121


5 6
4
3 2 1
6
5
4
1
2
3

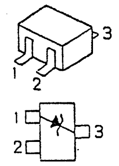
MA159



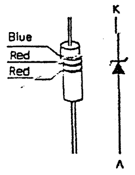
MA3071



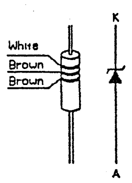
MA3062



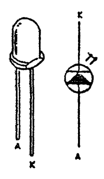
MA4062M


Blue
Red
Red
K
A

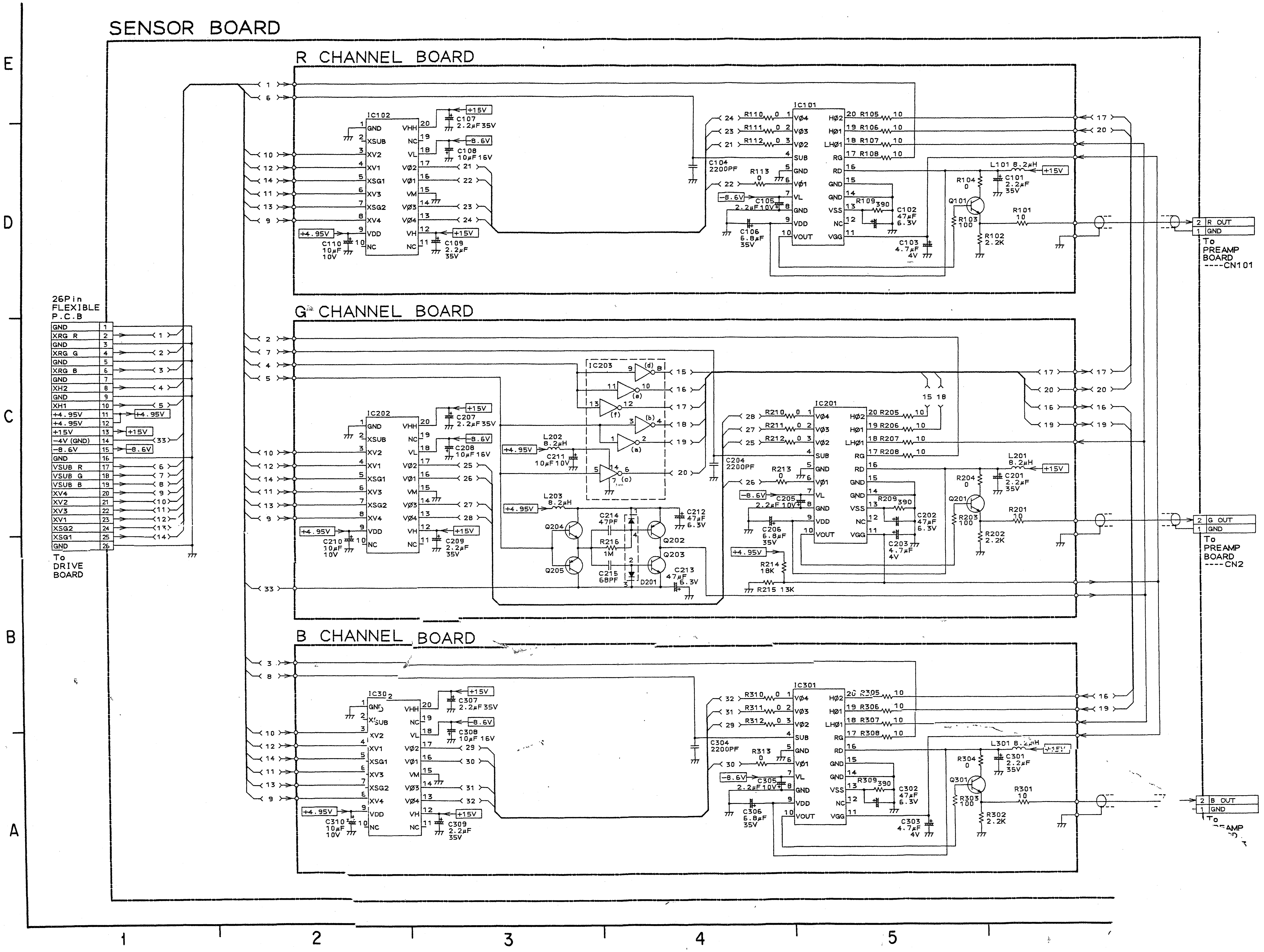
MA4091M


White
Brown
Brown
K
A

LN11WP23

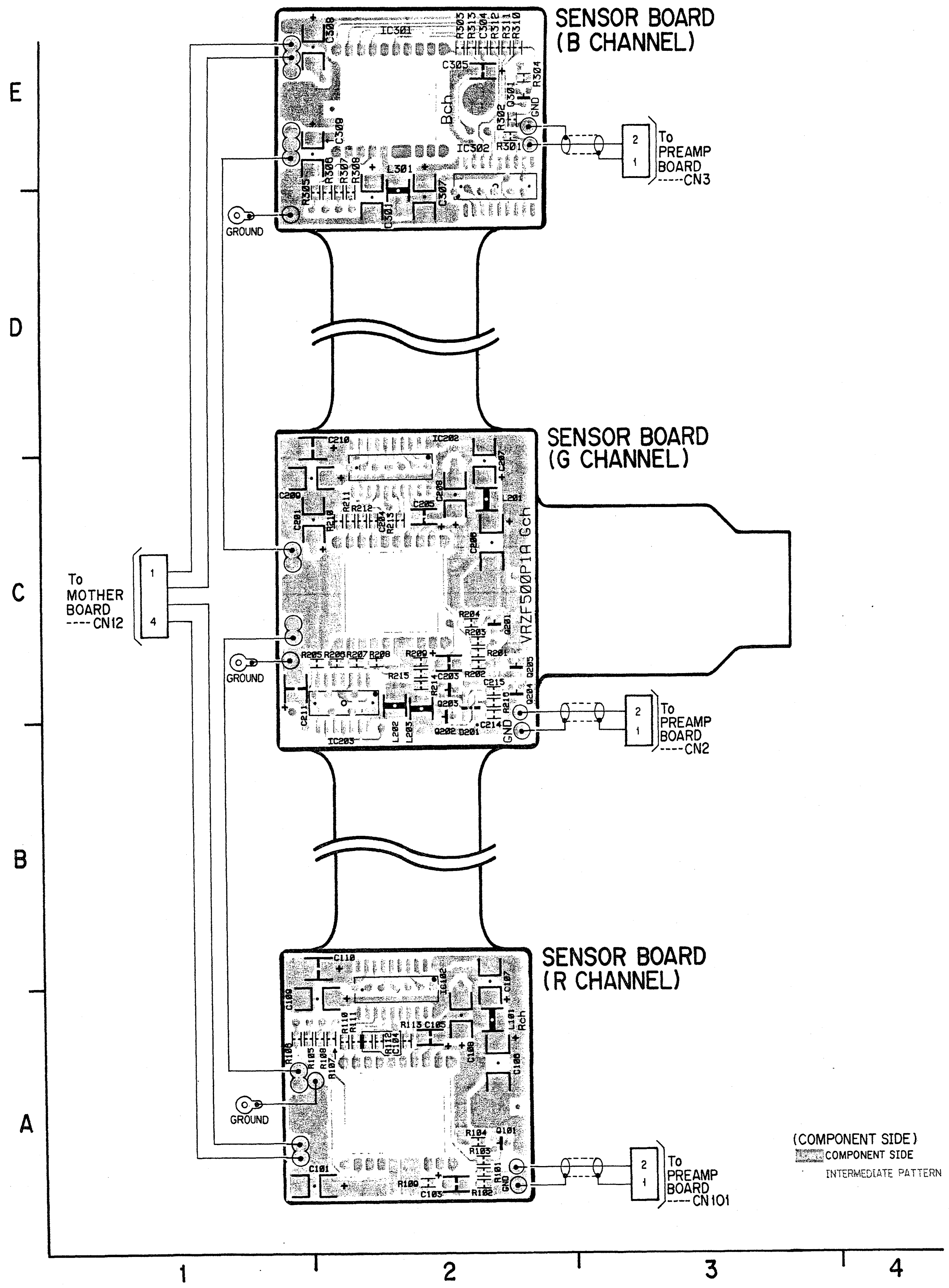


SCHEMATIC DIAGRAM OF SENSOR BOARD

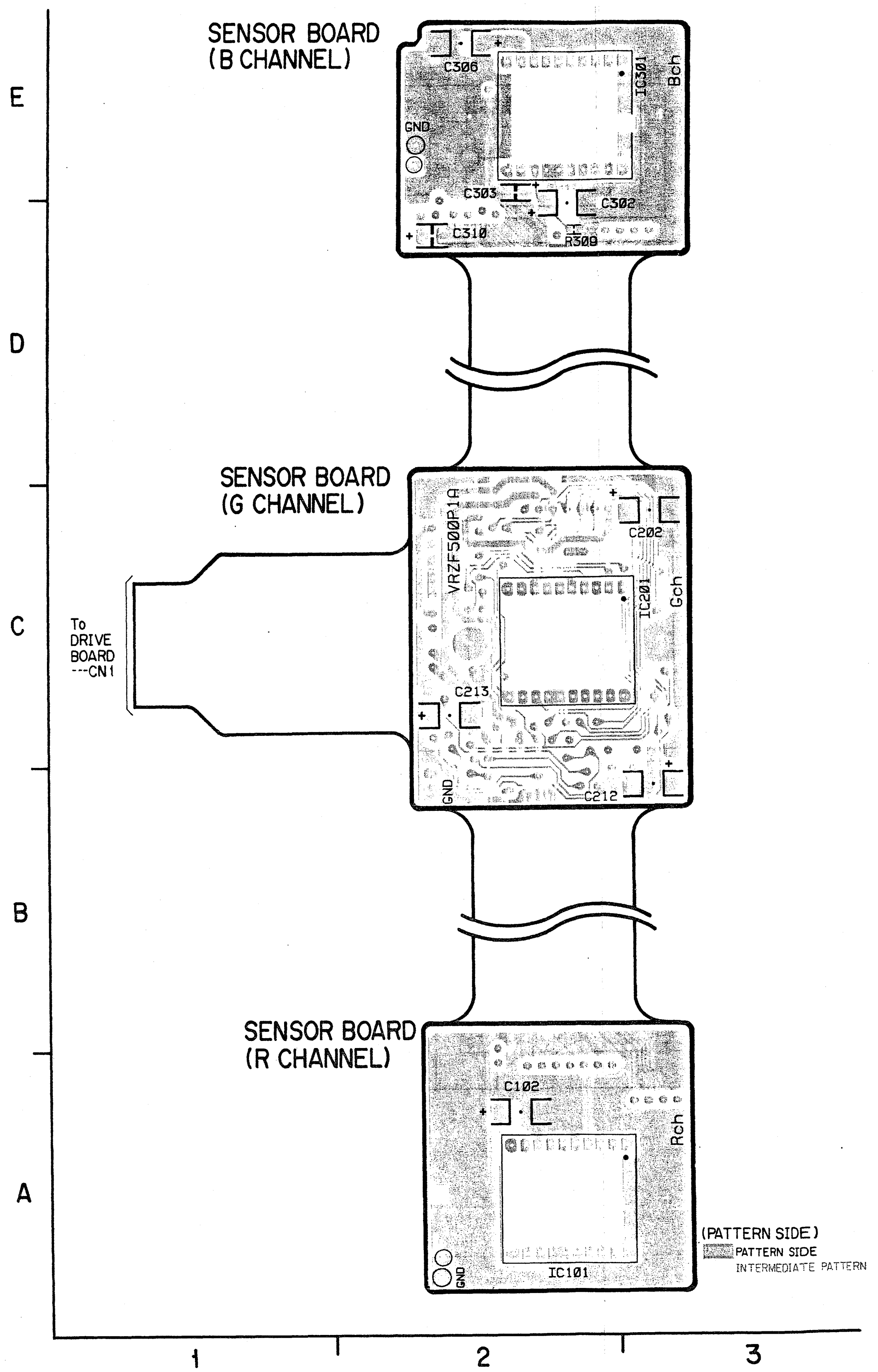

SENSOR BOARD
R CHANNEL BOARD
G CHANNEL BOARD
B CHANNEL BOARD
26Pin FLEXIBLE P.C.B
To DRIVE BOARD
IC101
IC102
IC201
IC202
IC203
IC301
IC302
To PREAMP BOARD ----CN101
To PREAMP BOARD ----CN2
R OUT
G OUT
B OUT
GND
+15V
-8.6V
+4.95V
E
D
C
B
A
1
2
3
4
5

CONDUCTOR VIEW OF SENSOR BOARD

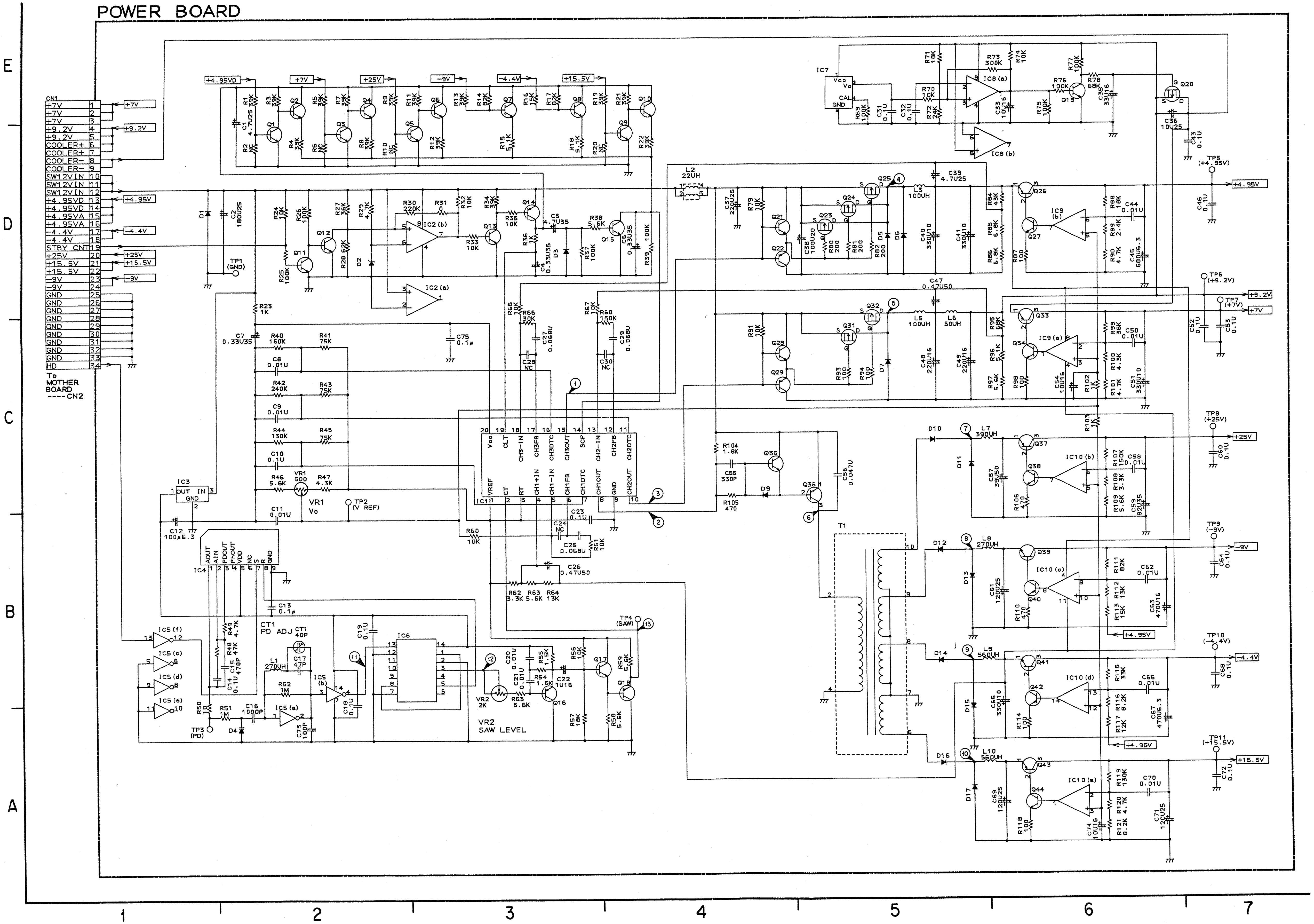
COMPONENT SIDE


SENSOR BOARD (B CHANNEL)
SENSOR BOARD (G CHANNEL)
SENSOR BOARD (R CHANNEL)
To PREAMP BOARD ----CN3
To PREAMP BOARD ----CN2
To PREAMP BOARD ----CN101
To MOTHER BOARD ----CN12
GROUND
GROUND
GROUND
IC301
IC302
IC202
IC203
Bch
Gch
Rch
VRZF500P1A
C305
C306
C308
C307
L301
Q301
R301
R302
R304
GND
C210
C209
C201
C205
C206
C207
L201
R204
R205
R206
R207
R208
R209
R210
R211
R212
R213
R214
R215
C203
C211
C214
C215
L202
L203
Q201
Q202
Q203
Q204
Q205
C110
C109
C102
C104
C105
C106
C107
C108
C101
C103
L101
R104
R105
R106
R107
R108
R109
R110
R111
R113
Q101
(COMPONENT SIDE)
COMPONENT SIDE
INTERMEDIATE PATTERN
A
B
C
D
E
1
2
3
4

PATTERN SIDE


SENSOR BOARD (B CHANNEL)
SENSOR BOARD (G CHANNEL)
SENSOR BOARD (R CHANNEL)
To DRIVE BOARD ---CN1
C306
IC301
Bch
GND
C303
C302
C310
R309
VRZF500P1A
C202
IC201
Gch
C213
C212
GND
C102
Rch
IC101
GND
(PATTERN SIDE)
PATTERN SIDE
INTERMEDIATE PATTERN
A
B
C
D
E
1
2
3

SCHEMATIC DIAGRAM OF POWER BOARD


POWER BOARD
CN1
1 +7V
2 +7V
3 +7V
4 +9.2V
5 +9.2V
6 COOLER+
7 COOLER+
8 COOLER−
9 COOLER−
10 SW12VIN
11 SW12VIN
12 SW12VIN
13 +4.95VD
14 +4.95VD
15 +4.95VA
16 +4.95VA
17 −4.4V
18 −4.4V
19 STBY CNT
20 +25V
21 +15.5V
22 +15.5V
23 −9V
24 −9V
25 GND
26 GND
27 GND
28 GND
29 GND
30 GND
31 GND
32 GND
33 GND
34 HD
To MOTHER BOARD ----CN2
TP1 (GND)
TP2 (V REF)
TP3 (PD)
TP4 (SAW)
TP5 (+4.95V)
TP6 (+9.2V)
TP7 (+7V)
TP8 (+25V)
TP9 (−9V)
TP10 (−4.4V)
TP11 (+15.5V)
VR1 Vo
VR2 SAW LEVEL
CT1 PD ADJ
T1
E
D
C
B
A
1
2
3
4
5
6
7

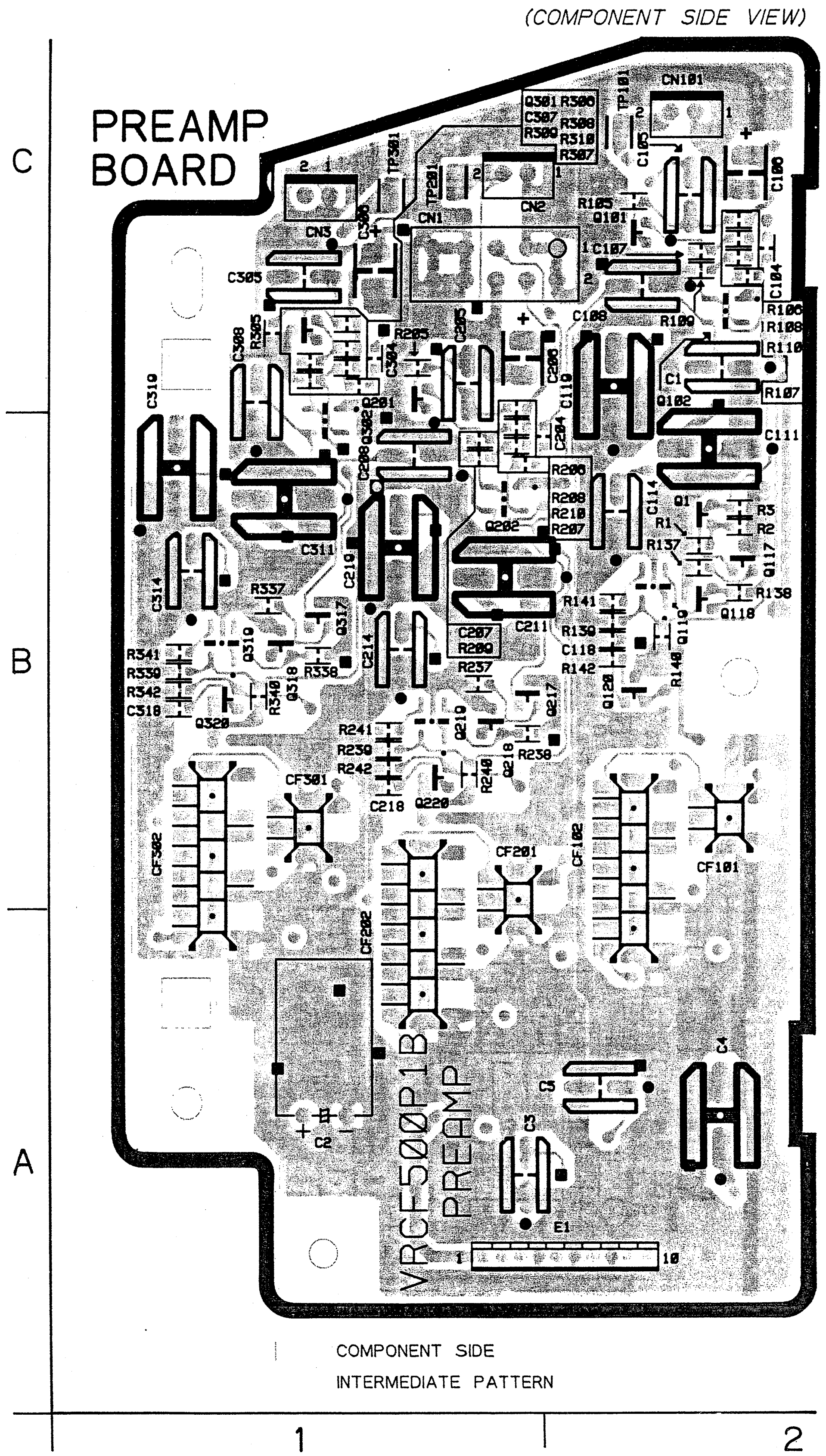
<Index>

POWER BOARD

IC4	B1
IC5	A2, B1, B2
Q20	E7
Q23	D5
Q24	D5
Q25	D5
Q26	D6
Q31	C5
Q32	D5
Q33	C6
Q36	C5
Q37	C6
Q41	B6
Q43	A6
D1	D1
D4	A2
D5	D5
D6	D5
D7	C5
D10	C5
D11	C5
D12	B5
D13	B5
D14	B5
D15	A5
D16	A5
D17	A5
IC1	C3
IC2	D3
IC3	C1
IC6	B2
IC7	E5
IC8	D6, E6
IC9	C6, D6
IC10	A6, B6, C6
Q1	D2
Q2	E2
Q3	D2
Q4	E2
Q5	D3
Q6	E3
Q7	E3
Q8	E3
Q9	D4
Q10	E4
Q11	D2
Q12	D2
Q13	D3
Q14	D3
Q15	D3
Q16	B3
Q17	A4
Q18	A4
Q19	E6
Q21	D4
Q22	D4
Q27	D6
Q28	C4
Q29	C4
Q34	C6
Q35	C4
Q38	C6
Q39	B6
Q40	B6
Q42	B6
Q44	A6
D2	D2
D3	D3
D9	C4

CONDUCTOR VIEW OF PREAMP BOARD

COMPONENT SIDE


(COMPONENT SIDE VIEW)
PREAMP BOARD
C
B
A
1
2
CN101
CN1
CN2
CN3
CF101
CF102
CF201
CF202
CF301
CF302
E1
VRCE500P1B
PREAMP
COMPONENT SIDE
INTERMEDIATE PATTERN

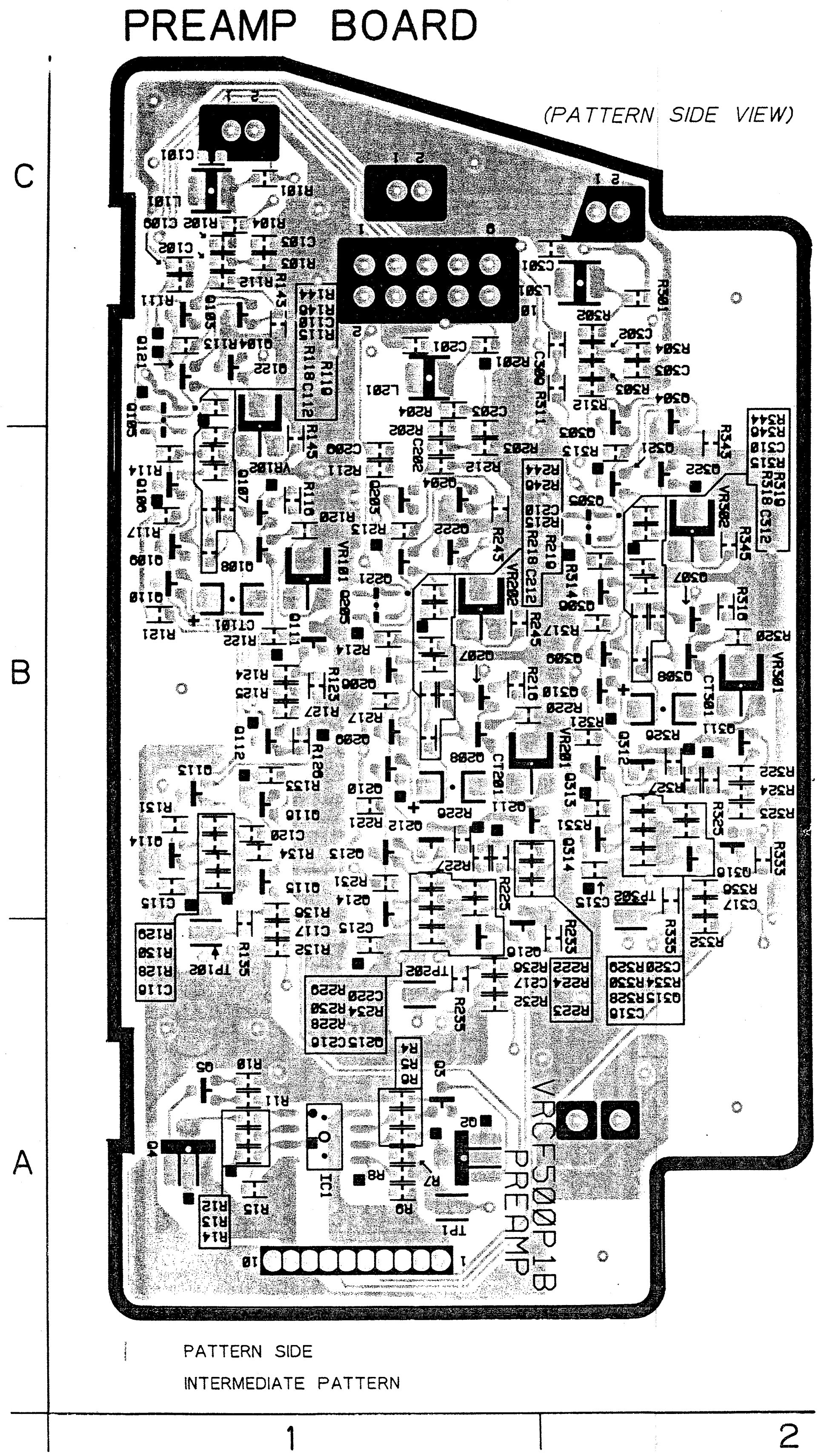
<Index>

PREAMP BOARD

COMPONENT SIDE

Q1	B2
Q101	C2
Q102	C2
Q117	B2
Q118	B2
Q119	B2
Q120	B2
Q201	B1
Q202	B1
Q217	B2
Q218	B1
Q219	B1
Q220	B1
Q301	C1
Q302	B1
Q317	B1
Q318	B1
Q319	B1
Q320	B1

PATTERN SIDE


PREAMP BOARD
(PATTERN SIDE VIEW)
C
B
A
1
2
IC1
TP1
TP102
TP202
VRCE500P1B
PREAMP
PATTERN SIDE
INTERMEDIATE PATTERN

<Index>

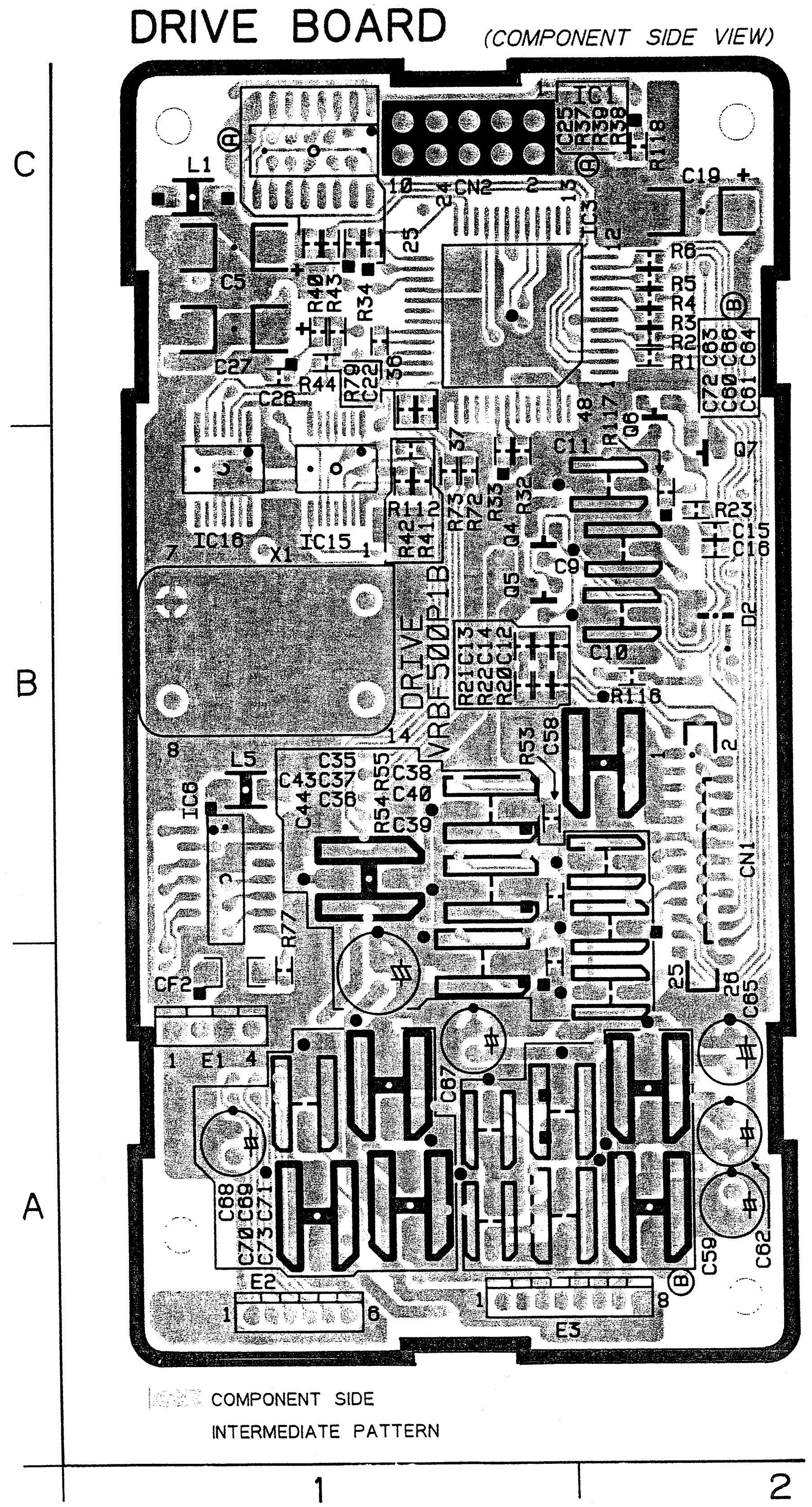
PREAMP BOARD

PATTERN SIDE

IC1	A1
Q2	A1
Q3	A1
Q4	A1
Q5	A1
Q103	C1
Q104	C1
Q105	B1
Q106	B1
Q107	B1
Q108	B1
Q109	B1
Q110	B1
Q111	B1
Q112	B1
Q113	B1
Q114	B1
Q115	B1
Q116	B1
Q121	C1
Q122	C1
Q203	B1
Q204	B1
Q205	B1
Q206	B1
Q207	B1
Q208	B1
Q209	B1
Q210	B1
Q211	B1
Q212	B1
Q213	B1
Q214	B1
Q215	A1
Q216	A1
Q221	B1
Q222	B1
Q303	B2
Q304	C2
Q305	B2
Q306	B2
Q307	B2
Q308	B2
Q304	B2
Q310	B2
Q311	B2
Q312	B2
Q313	B2
Q314	B2
Q315	A2
Q316	B2
Q321	B2
Q322	B2

CONDUCTOR VIEW OF DRIVE BOARD

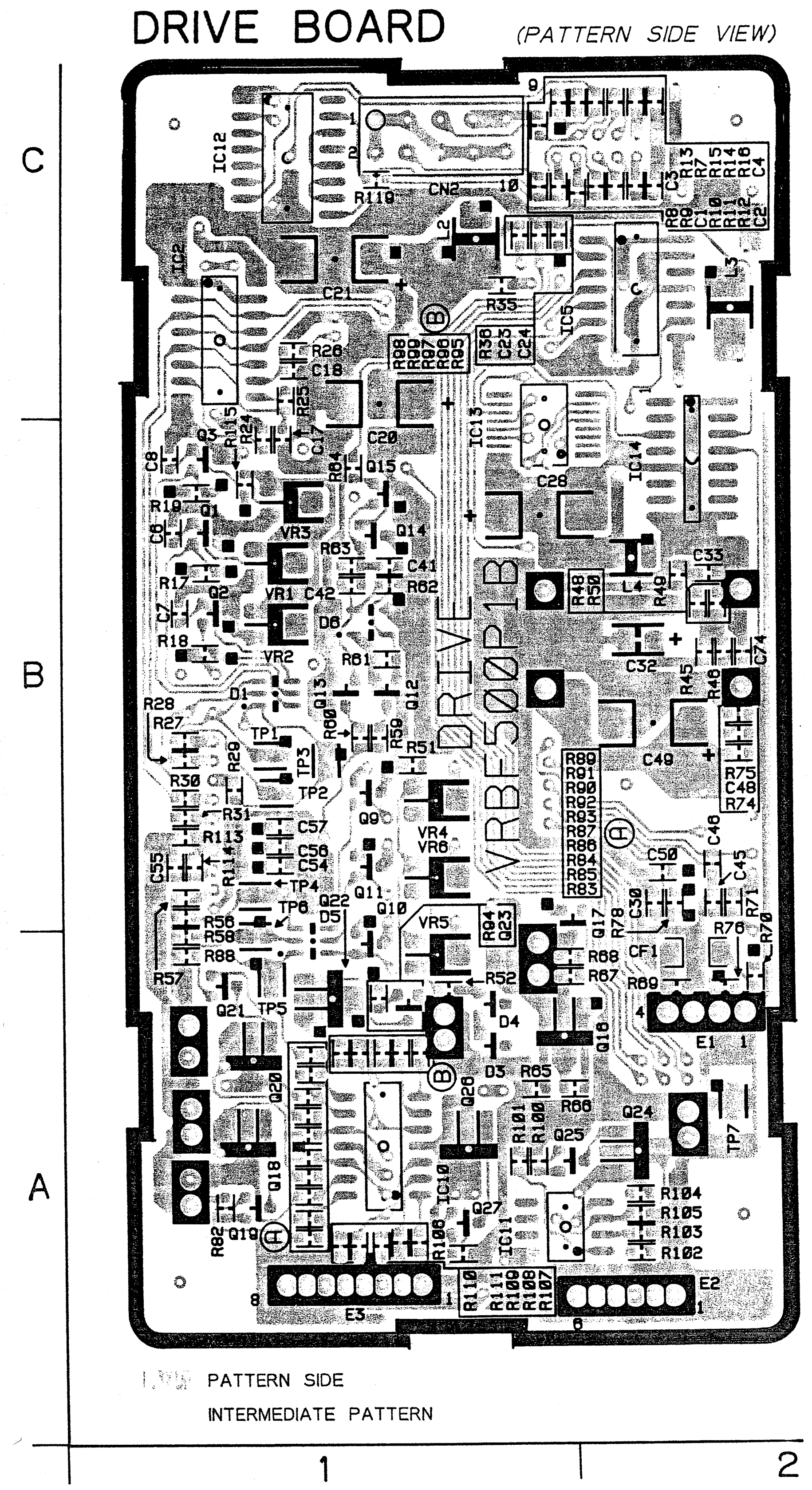
COMPONENT SIDE


DRIVE BOARD
(COMPONENT SIDE VIEW)
C
B
A
1
2
IC1
IC3
IC6
IC15
IC16
CN1
CN2
X1
L1
L5
Q4
Q5
Q6
Q7
D2
CF2
E1
E2
E3
DRIVE
VRBF500P1B
COMPONENT SIDE
INTERMEDIATE PATTERN

<Index>
DRIVE BOARD
COMPONENT SIDE

IC1	C1
IC3	C1
IC6	B1
IC15	B1
IC16	B1
Q4	B1
Q5	B1
Q6	B2
Q7	B2
D2	B2

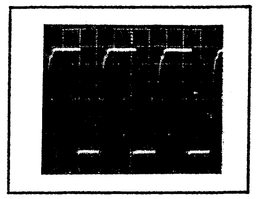
PATTERN SIDE


DRIVE BOARD
(PATTERN SIDE VIEW)
C
B
A
1
2
IC2
IC5
IC10
IC11
IC12
IC13
IC14
CN2
VR1
VR2
VR3
VR4
VR5
VR6
CF1
TP1
TP2
TP3
TP4
TP5
TP6
TP7
E1
E2
E3
DRIVE
VRBF500P1B
PATTERN SIDE
INTERMEDIATE PATTERN

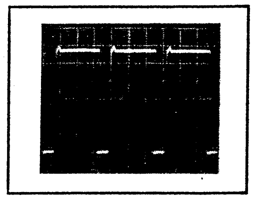
<Index>
DRIVE BOARD
PATTERN SIDE

IC2	C1
IC5	C2
IC10	A1
IC12	C1
IC13	B1
IC14	B2
Q1	B1
Q2	B1
Q3	B1
Q9	B1
Q10	B1
Q11	B1
Q12	B1
Q13	B1
Q14	B1
Q15	B1
Q16	B1
Q17	B2
Q18	A1
Q19	A1
Q22	A1
Q23	A1
D1	B1
D3	A1
D4	A1
D5	A1
D6	B1

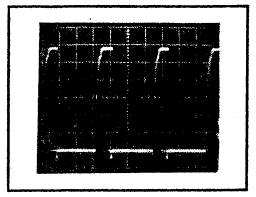
1. 5 µsec/DIV 2V/DIV



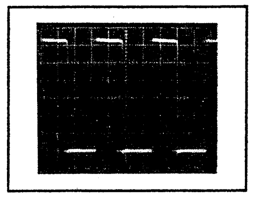
2. 5 µsec/DIV 2V/DIV



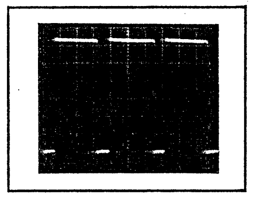
3. 5 µsec/DIV 2V/DIV



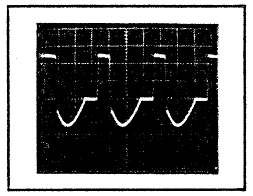
4. 5 µsec/DIV 2V/DIV



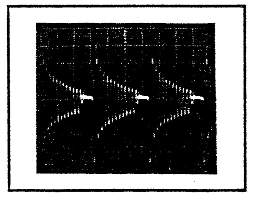
5. 5 µsec/DIV 2V/DIV



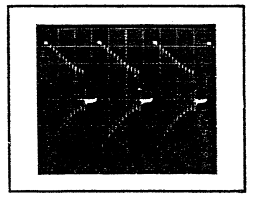
6. 5 µsec/DIV 5V/DIV



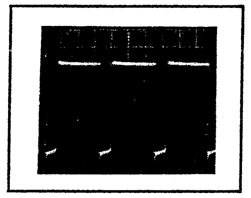
7. 5 µsec/DIV 10V/DIV



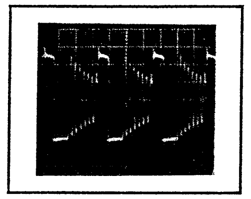
8. 5 µsec/DIV 5V/DIV



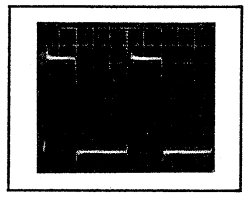
9. 5 µsec/DIV 5V/DIV



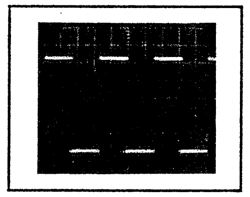
10. 5 µsec/DIV 10V/DIV



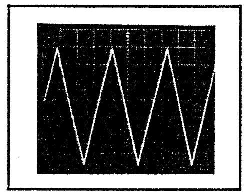
11. 0.1 µsec/DIV 1V/DIV



12. 5 µsec/DIV 1V/DIV



13. 5 µsec/DIV 0.1V/DIV



Power Board

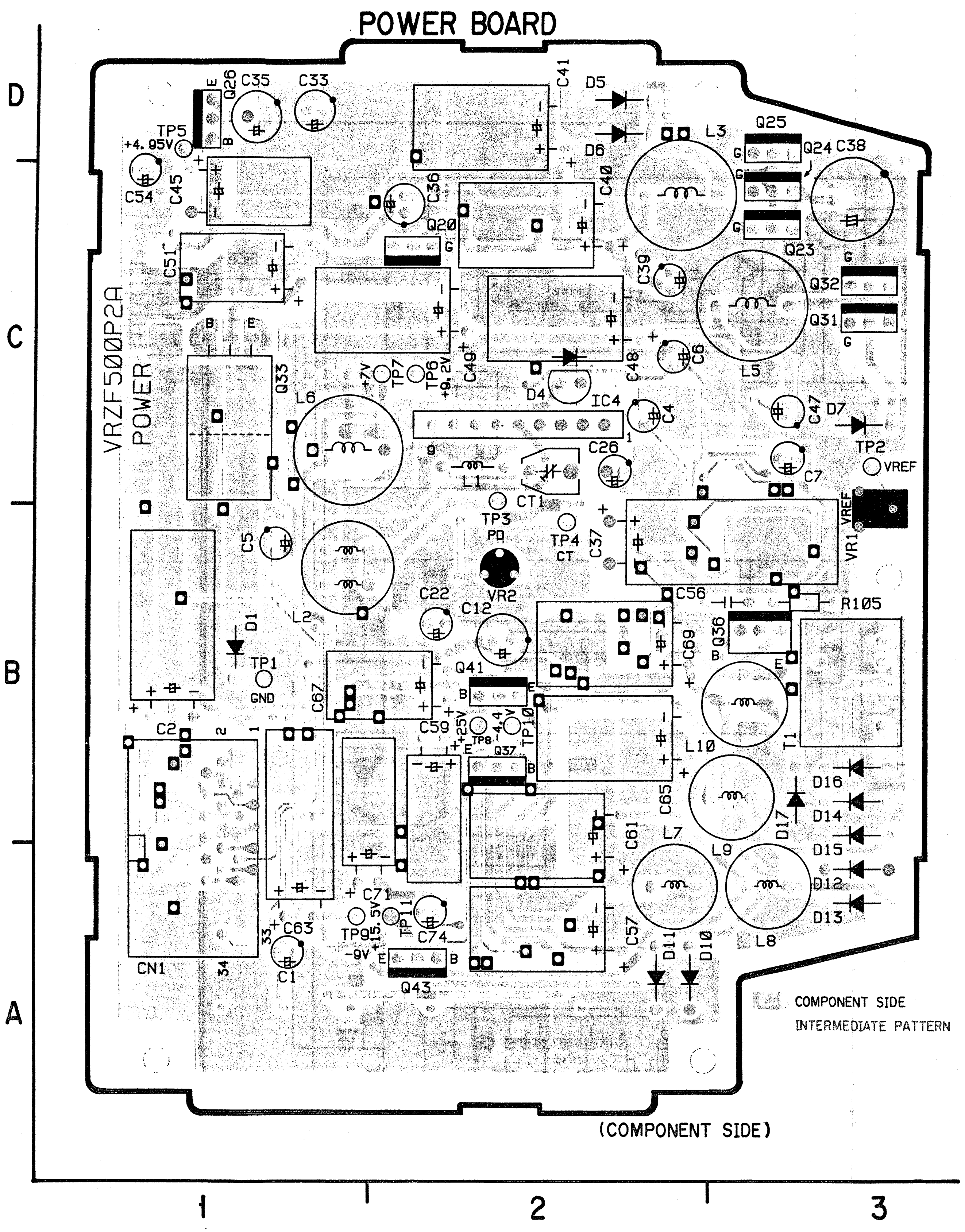
	IC2	IC3	IC4	IC5	IC6	IC7	IC8	IC9	IC10
Pin 1	-	11.8	3.5	2.4	2.5	9.2	0.0	0.8	0.6
2	0.0	0.0	2.4	3.1	0.0	1.9	5.3	1.4	1.4
3	11.8	5.0	2.4	3.1	2.5	0.0	1.8	1.4	1.4
4	-11.2		5.0	1.9	2.5	0.0	0.0	-4.8	5.2
5	7.2		5.0	0.0	2.5	-	9.2	1.4	1.4
6	6.0		-	5.0	2.5	-	-11.2	1.4	1.4
7	6.3		4.5	0.0	0.0	-	-	0.9	0.5
8	11.8		2.5	5.0	2.5	-	9.2	5.2	-0.5
9			0.0	0.0	2.5				1.4
10				5.0	2.5				1.4
11				0.0	2.5				-4.8
12				4.5	0.0				1.4
13				0.5	1.9				1.4
14				5.0	5.0				-0.8

	IC1
Pin 1	2.5
2	1.6
3	2.5
4	1.4
5	1.4
6	1.4
7	1.6
8	10.6
9	-11.2
10	3.6
11	1.9
12	1.8
13	1.2
14	0
15	7.5
16	1.7
17	1.6
18	1.2
19	11.4
20	9.0

	B	C	E
Q1	0.6	0.0	0.0
2	0.0	11.8	0.0
3	0.6	0.0	0.0
4	0.0	11.8	0.0
5	0.7	0.0	0.0
6	0.0	11.8	0.0
7	-2.2	11.8	0.0
8	-1.9	11.8	0.0
9	0.7	0.0	0.0
10	0.0	11.8	0.0
11	0.6	0.0	0.0
12	0.0	7.4	0.0
13	0.7	0.0	0.0
14	11.1	11.8	11.8
15	0.0	0.0	0.0
16	2.5	-11.2	3.2
17	1.6	2.5	1.0
18	1.0	-11.1	1.6
19	0.0	9.1	0.0
20	8.9 (G)	7.7 (D)	9.2 (S)
21	7.5	11.8	7.1
22	7.5	-12.5	7.1
23	7.1 (G)	5.3 (D)	11.8 (S)
24	7.1 (G)	5.3 (D)	11.8 (S)
25	7.1 (G)	5.3 (D)	11.8 (S)
26	4.6	5.0	5.2
27	0.9	4.9	0.2
28	3.6	11.8	3.6
29	3.6	-12.4	3.6
31	3.6 (G)	9.3 (D)	11.8 (S)
32	3.6 (G)	9.3 (D)	11.8 (S)
33	7.1	7.0	7.7
34	0.8	7.1	0.1
35	11.5	11.8	11.5
36	11.5	14.3	11.8
37	32.6	25	33
38	0.5	32.7	0.0
39	-11.4	-9.0	-12.0
40	-0.5	-11.4	0.0
41	-4.1	-4.4	-4.8
42	-0.8	-4.2	-0.1
43	18.3	15.5	18.9
44	0.6	18.3	0.0

CONDUCTOR VIEW OF P

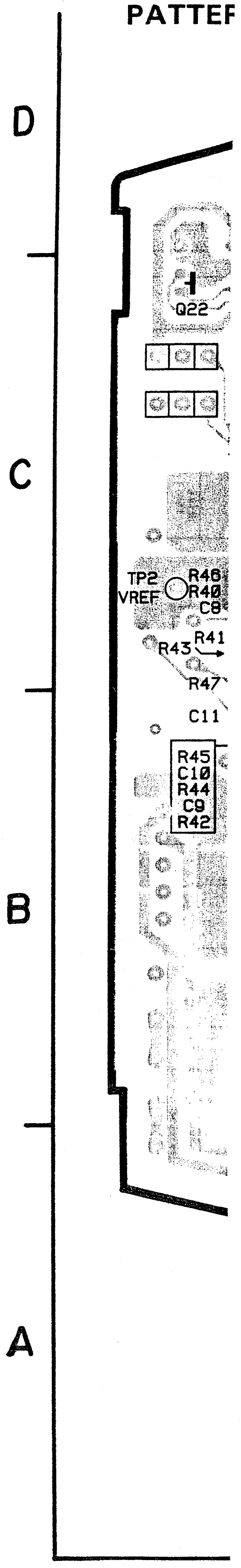
COMPONENT SIDE


POWER BOARD
D
C
B
A
1
2
3
VRZF500P2A
POWER
CN1
C1
C2
C5
C7
C12
C22
C26
C33
C35
C36
C37
C38
C39
C40
C41
C45
C47
C48
C49
C51
C54
C56
C57
C59
C61
C63
C65
C67
C69
C71
C74
CT1
CT
D1
D4
D5
D6
D7
D10
D11
D12
D13
D14
D15
D16
D17
IC4
L1
L2
L3
L5
L6
L7
L8
L9
L10
Q20
Q23
Q24
Q25
Q26
Q31
Q32
Q33
Q36
Q37
Q41
Q43
R105
T1
TP1
GND
TP2
VREF
TP3
PD
TP4
TP5
+4.95V
TP6
+9.2V
TP7
+7V
TP8
TP9
-9V
TP10
TP11
+15.5V
+25V
VR1
VR2
COMPONENT SIDE
INTERMEDIATE PATTERN

(COMPONENT SIDE)

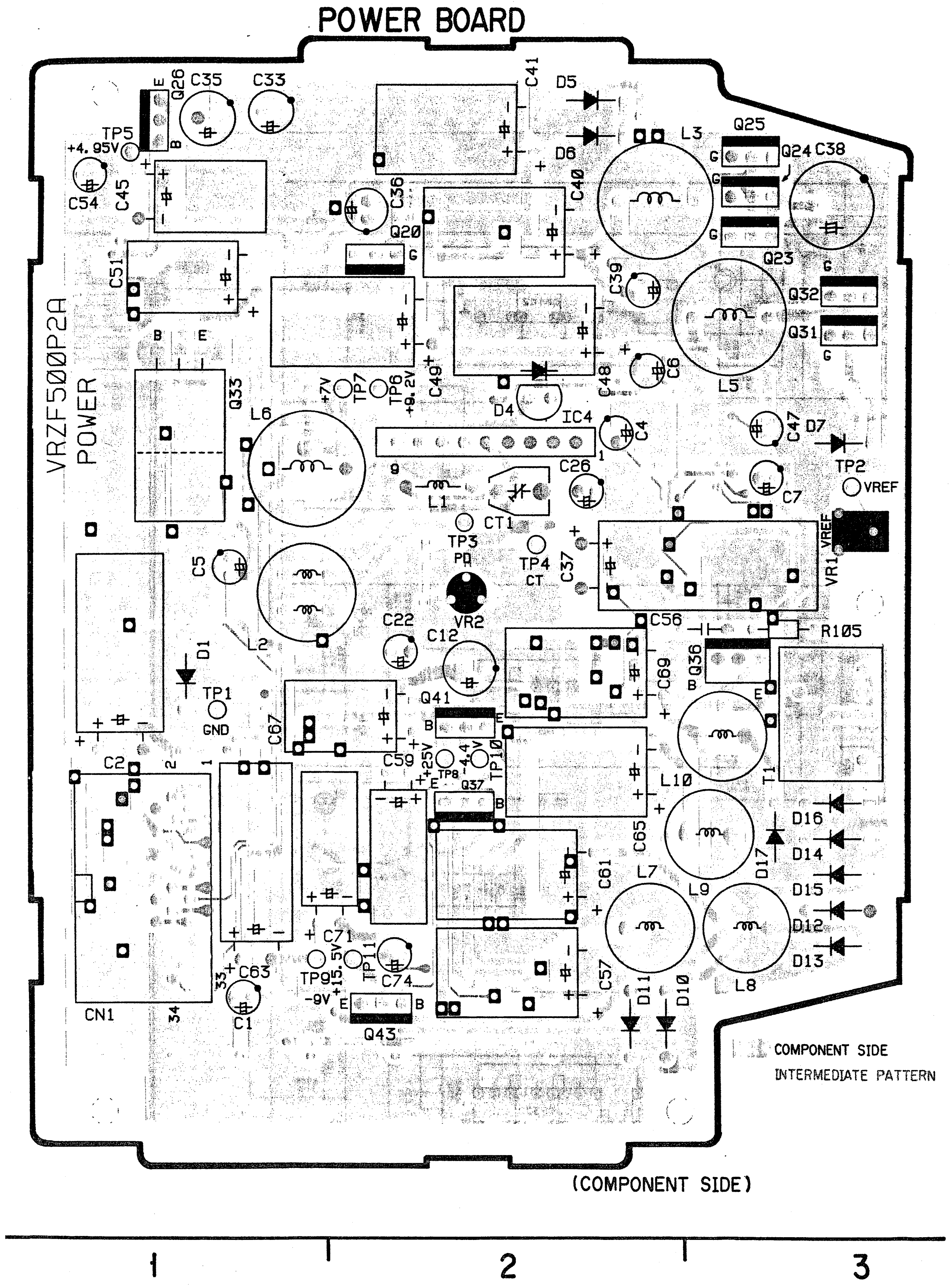
<Index>	
POWER BOARD	
COMPONENT SIDE	
IC4	C2
IC6	B2
Q20	C2
Q23	C3
Q24	D3
Q25	D3
Q26	D1
Q31	C3
Q32	C3
Q33	C1
Q36	B3
Q37	B2
Q41	B2
Q43	A2
D1	B1
D2	C3
D3	C3
D4	C2
D5	D2
D6	D2
D7	C3
D9	B1
D10	A2
D11	A2
D12	A3
D13	A3
D14	B3
D15	A3
D16	B3
D17	B3

PATTER


D
C
B
A
Q22
TP2
VREF
R46
R40
C8
R43
R41
R47
C11
R45
C10
R44
C9
R42

CONDUCTOR VIEW OF POWER BOARD

COMPONENT SIDE



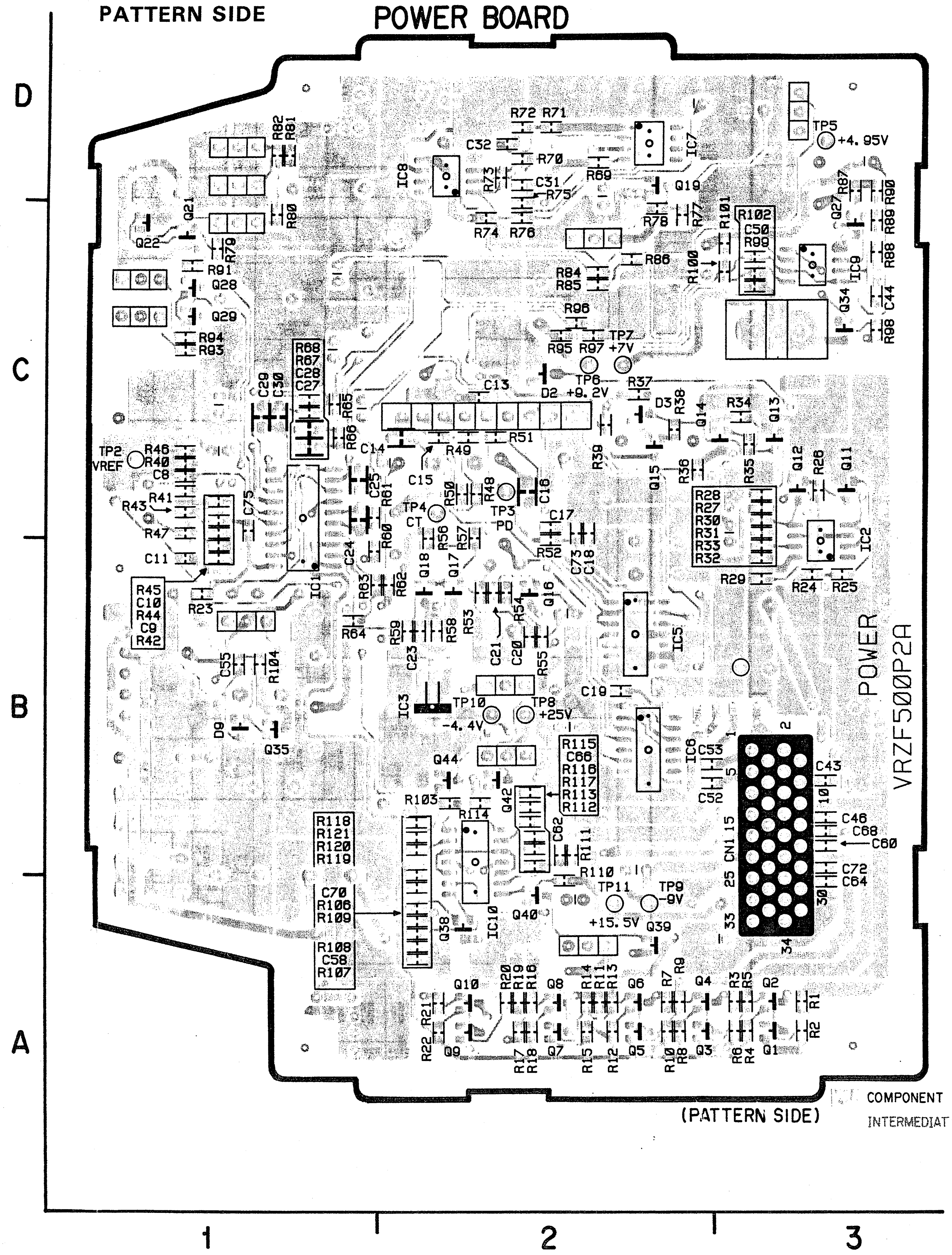
POWER BOARD
VRZF500P2A
POWER
TP5 +4.95V
TP1 GND
TP2 VREF
TP3 PD
TP4 CT
TP6 +9.2V
TP7 +7V
TP8 -4.4V
TP9 -9V
TP10 +25V
TP11 +15.5V
CN1
VR1
VR2
IC4
L1
L2
L3
L5
L6
L7
L8
L9
L10
T1
CT1
COMPONENT SIDE
INTERMEDIATE PATTERN
1
2
3

(COMPONENT SIDE)

<Index>
POWER BOARD
COMPONENT SIDE

IC4	C2
IC6	B2
Q20	C2
Q23	C3
Q24	D3
Q25	D3
Q26	D1
Q31	C3
Q32	C3
Q33	C1
Q36	B3
Q37	B2
Q41	B2
Q43	A2
D1	B1
D2	C3
D3	C3
D4	C2
D5	D2
D6	D2
D7	C3
D9	B1
D10	A2
D11	A2
D12	A3
D13	A3
D14	B3
D15	A3
D16	B3
D17	B3

PATTERN SIDE



POWER BOARD
D
C
B
A
VRZF500P2A
POWER
TP5 +4.95V
TP2 VREF
TP3 PD
TP4 CT
TP6 +9.2V
TP7 +7V
TP8 +25V
TP9 -9V
TP10 -4.4V
TP11 +15.5V
IC1
IC2
IC3
IC5
IC7
IC8
IC9
IC10
CN1
COMPONENT SIDE
INTERMEDIATE PATTERN
1
2
3

(PATTERN SIDE)

<Index>
POWER BOARD
PATTERN SIDE

IC1	B1
IC2	B3
IC3	B2
IC5	B2
IC7	D2
IC8	D2
IC9	C3
IC10	A2
Q1	A3
Q2	A3
Q3	A2
Q4	A2
Q5	A2
Q6	A2
Q7	A2
Q8	A2
Q9	A2
Q10	A2
Q11	C3
Q12	C3
Q13	C3
Q14	C2
Q15	C2
Q16	B2
Q17	B2
Q18	B2
Q19	D2
Q21	C1
Q22	C1
Q27	C3
Q28	C1
Q29	C1
Q34	C3
Q35	B1
Q38	A2
Q39	A2
Q40	A2
Q42	B2
Q44	B2

SCHEMATIC DIAGRAM OF PREAMP BOARD

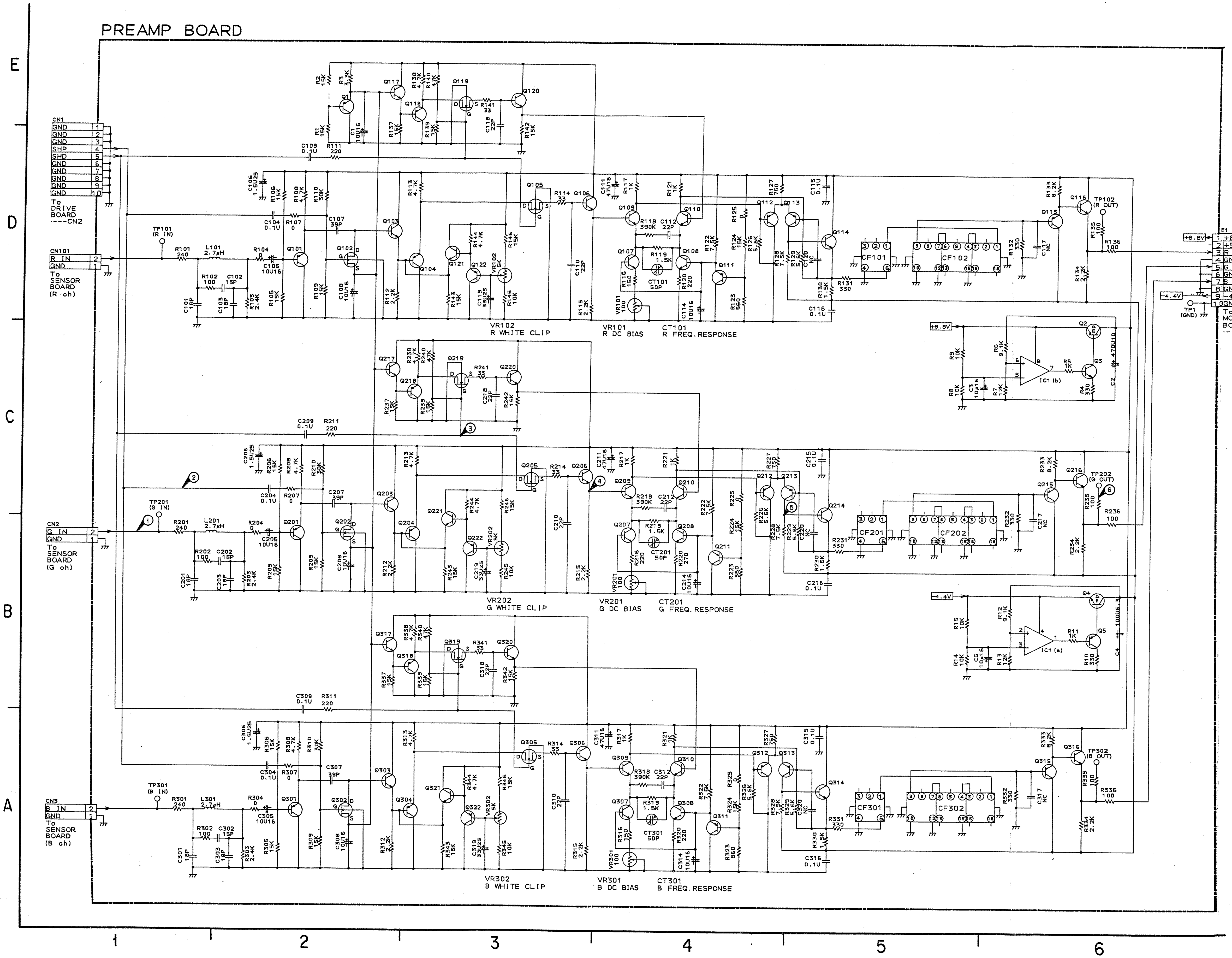
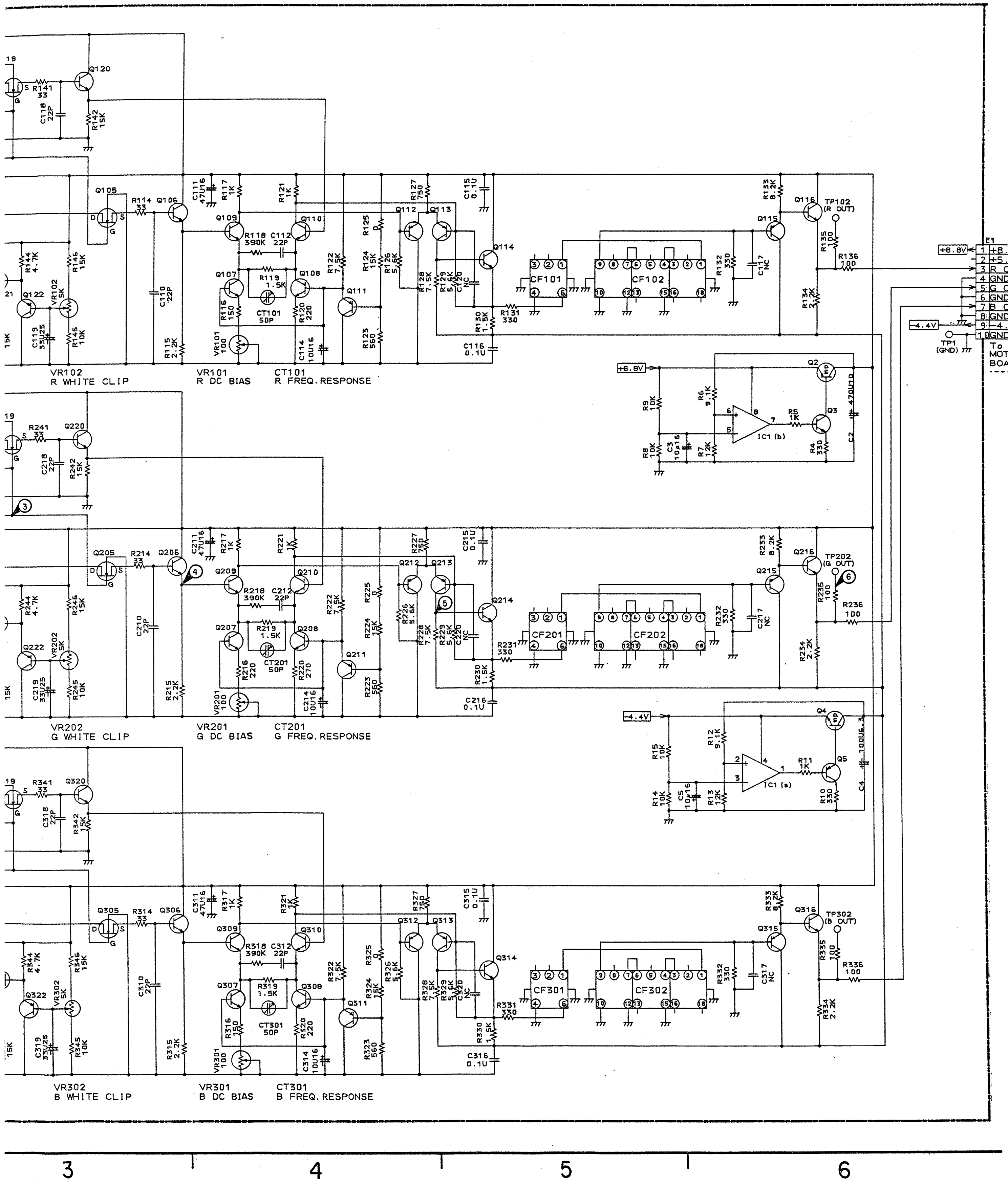

PREAMP BOARD
E
D
C
B
A
1
2
3
4
5
6
CN1
GND
GND
GND
SHP
SHD
GND
GND
GND
GND
GND
To DRIVE BOARD ---CN2
CN101
R IN
GND
To SENSOR BOARD (R ch)
CN2
G IN
GND
To SENSOR BOARD (G ch)
CN3
B IN
GND
To SENSOR BOARD (B ch)
TP101 (R IN)
TP201 (G IN)
TP301 (B IN)
R101 240
L101 2.7μH
R201 240
L201 2.7μH
R301 240
L301 2.7μH
VR102 R WHITE CLIP
VR101 R DC BIAS
CT101 R FREQ. RESPONSE
VR202 G WHITE CLIP
VR201 G DC BIAS
CT201 G FREQ. RESPONSE
VR302 B WHITE CLIP
VR301 B DC BIAS
CT301 B FREQ. RESPONSE
CF101
CF102
CF201
CF202
CF301
CF302
TP102 (R OUT)
TP202 (G OUT)
TP302 (B OUT)
IC1 (b)
IC1 (a)
+8.8V
-4.4V
E1
+8.8V
+5.2V (NC)
R OUT
GND
G OUT
GND
B OUT
GND
-4.4V
GND
TP1 (GND)
To MOTHER BOARD ---CN14

DIAGRAM OF PREAMP BOARD


Q120
R141 33
C118 22P
R142 15K
Q105
R114
Q106
C111 47U16
R117 1K
R121 1K
Q109
Q110
R118 390K
C112 22P
R119 1.5K
Q107
Q108
CT101 50P
R116 150
R120 220
VR101 100
C114 10U16
R115 2.2K
C110 22P
R144 4.7K
R146 15K
Q122
VR102 5K
R145 10K
C119 33U25
Q111
R122
R124 15K
R125
R126 5.6K
R123 560
Q112
Q113
R127 750
R128 7.5K
R129
R130 1.5K
R131 330
C115 0.1U
C116 0.1U
Q114
CF101
CF102
R132 330
C117 NC
R133 8.2K
Q115
Q116
TP102 (R OUT)
R135 100
R136 100
R134 2.2K
VR102 R WHITE CLIP
VR101 R DC BIAS
CT101 R FREQ. RESPONSE
+8.8V
E1
1 +8.8V
2 +5.2V (NC)
3 R OUT
4 GND
5 G OUT
6 GND
7 B OUT
8 GND
9 -4.4V
10 GND
-4.4V
TP1 (GND)
To MOTHER BOARD ----CN14
Q2
Q3
R9
R6 9.1K
R8 10K
C3 10U16
R7 12K
IC1 (b)
R5 1K
R4 330
C2 470U10
R241
Q220
C218 22P
R242 15K
Q205
R214
Q206
C211 47U16
R217 1K
R221
Q209
Q210
R218 390K
C212 22P
R219 1.5K
Q207
Q208
CT201 50P
R216 220
R220 270
VR201 100
C314 10U16
R215 2.2K
C210 22P
R244 4.7K
R246 15K
Q222
VR202 5K
R245 10K
C219 33U25
Q211
R222
R223 560
R224 15K
R225
R226 5.6K
Q212
Q213
R227 750
R228 7.5K
R229
R230 1.5K
R231 330
C215 0.1U
C216 0.1U
Q214
CF201
CF202
R232 330
C217 NC
R233 8.2K
Q215
Q216
TP202 (G OUT)
R235 100
R236 100
R234 2.2K
VR202 G WHITE CLIP
VR201 G DC BIAS
CT201 G FREQ. RESPONSE
Q4
Q5
R15 10K
R12 9.1K
R14 10K
C5 10U16
R13 12K
IC1 (a)
R11 1K
R10 330
C4 100U6.3
R341
Q320
C318 22P
R342 15K
Q305
R314
Q306
C311 47U16
R317 1K
R321 1K
Q309
Q310
R318 390K
C312 22P
R319 1.5K
Q307
Q308
CT301 50P
R316 150
R320 220
VR301 100
C314 10U16
R315 2.2K
C310 22P
R344 4.7K
R346 15K
Q322
VR302 5K
R345 10K
C319 33U25
Q311
R322
R323 560
R324 15K
R325
R326 5.6K
Q312
Q313
R327 750
R328 7.5K
R329
R330 1.5K
R331 330
C315 0.1U
C316 0.1U
C320 NC
Q314
CF301
CF302
R332 330
C317 NC
R333 8.2K
Q315
Q316
TP302 (B OUT)
R335 100
R336 100
R334 2.2K
VR302 B WHITE CLIP
VR301 B DC BIAS
CT301 B FREQ. RESPONSE
3
4
5
6

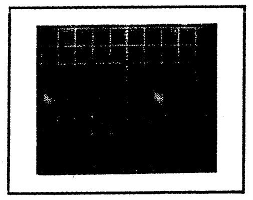
<Index>

PREAMP BOARD

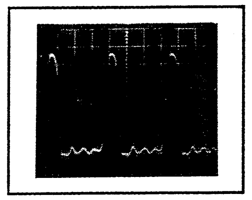
Q1	E2
Q101	D2
Q102	D2
Q117	E2
Q118	E3
Q119	E3
Q120	E3
Q201	B2
Q202	B2
Q217	C2
Q218	C3
Q219	C3
Q220	C3
Q301	A2
Q302	A2
Q317	B2
Q318	B3
Q319	B3
Q320	B3
IC1	B6, C6
Q2	D6
Q3	C6
Q4	B6
Q5	B6
Q103	D2
Q104	D3
Q105	D3
Q106	D3
Q107	D4
Q108	D4
Q109	D4
Q110	D4
Q111	D4
Q112	D4
Q113	D5
Q114	D5
Q115	D6
Q116	D6
Q121	D3
Q122	D3
Q203	C2
Q204	B3
Q205	C3
Q206	C3
Q207	B4
Q208	B4
Q209	C4
Q210	C4
Q211	B4
Q212	C4
Q213	C5
Q214	C5
Q215	C6
Q216	C6
Q221	C3
Q222	B3
Q303	A2
Q304	A3
Q305	A3
Q306	A3
Q307	A4
Q308	A4
Q309	A4
Q310	A4
Q311	A4
Q312	A4
Q313	A5
Q314	A5
Q315	A6
Q316	A6
Q321	A3
Q322	A3

Preamp board

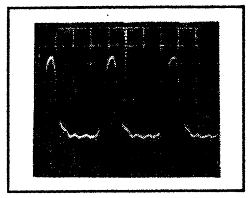
1. 10 µsec/DIV 0.1V/DIV



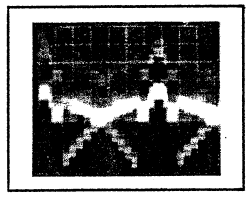
2. 20 nsec/DIV 1V/DIV



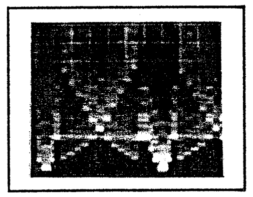
3. 20 nsec/DIV 1V/DIV



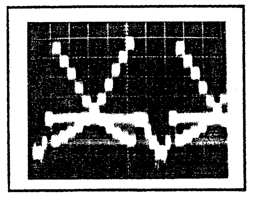
4. 10 µsec/DIV 50mV/DIV



5. 10 µsec/DIV 0.2V/DIV



6. 10 µsec/DIV 0.1V/DIV



Preamp Board

	B	C	E
Q101	3.1	0.0	3.8
103	3.8	6.1	3.0
104	3.0	0.0	3.7
106	3.6	6.1	2.8
107	0.9	2.1	0.3
108	0.9	2.3	0.3
109	2.8	4.2	2.1
110	3.0	4.2	2.3
111	0.2	0.0	1.0
112	4.2	0.0	4.9
113	4.2	1.9	4.9
114	1.9	6.1	1.2
115	0.6	-3.9	1.3
116	1.3	6.1	0..5
117	3.8	6.1	3.1
118	3.1	0.0	3.8
120	3.8	6.1	3.0
121	3.4	6.1	3.0
122	2.7	0.0	3.4
201	3.1	0.0	3.8
203	3.8	6.1	3.0
204	3.0	0.0	3.7
206	3.6	6.1	2.8
207	0.9	2.1	0.3
208	0.9	2.3	0.3
209	2.8	4.2	2.1
210	3.0	4.2	2.3
211	0.2	0.0	1.0
212	4.2	0.0	4.9
213	4.2	1.9	4.9
214	1.9	6.1	1.2
215	0.6	-3.9	1.3
216	1.3	6.1	0..5
217	3.8	6.1	3.1
218	3.1	0.0	3.8
220	3.8	6.1	3.0
221	3.4	6.1	3.0
222	2.7	0.0	3.4

	B	C	E
Q301	3.1	0.0	3.8
303	3.8	6.1	3.0
304	3.0	0.0	3.7
306	3.6	6.1	2.8
307	0.9	2.1	0.3
308	0.9	2.3	0.3
309	2.8	4.2	2.1
310	3.0	4.2	2.3
311	0.2	0.0	1.0
312	4.2	0.0	4.9
313	4.2	1.9	4.9
314	1.9	6.1	1.2
315	0.6	-3.9	1.3
316	1.3	6.1	0..5
317	3.8	6.1	3.1
318	3.1	0.0	3.8
320	3.8	6.1	3.0
321	3.4	6.1	3.0
322	2.7	0.0	3.4

	Q1	Q2	Q3	Q4	Q5
B	3.1	6.3	0.7	-3.7	-0.6
C	0.0	6.1	6.3	-3.8	-3.7
E	3.8	7.0	0.1	-4.4	0.0

	IC1
Pin 1	-0.6
2	-2.2
3	-2.2
4	-4.4
5	3.5
6	3.5
7	0.7
8	7.0

	1	2	3	4
Q102	0.0	2.0	3.8	3.8
105	0.0	1.5	3.7	3.6
119	0.0	1.5	3.8	3.8
202	0.0	2.0	3.8	3.8
205	0.0	1.5	3.7	3.6
219	0.0	1.5	3.8	3.8
302	0.0	2.0	3.8	3.8
305	0.0	1.5	3.7	3.6
319	0.0	1.5	3.8	3.8

Drive Board

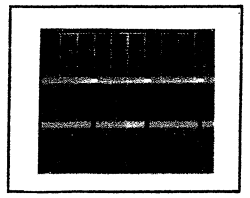
	IC1	IC2	IC5	IC6	IC10	IC12	IC13	IC14	IC15	IC16
Pin 1	4.8	0.0	4.4	2.2	4.1	4.8	0.0	4.9	2.1	4.9
2	1.1	2.0	0.5	2.2	-	1.2	2.4	0.5	2.1	0.0
3	1.2	2.1	0.5	2.2	-	1.2	2.4	0.0	-	4.4
4	1.1	1.7	4.4	2.0	4.9	1.2	2.4	0.0	2.1	4.8
5	1.1	1.9	0.1	2.0	3.7	1.1	2.4	4.9	2.1	0.6
6	1.1	4.0	4.7	2.6	3.7	1.1	2.4	0.0	0.1	4.3
7	0.9	3.9	0.0	0.0	1.0	1.1	2.4	0.0	0.0	0.0
8	0.0	0.0	4.8	1.9	-3.6	0.0	0.0	0.0	0.0	0.0
9	0.9	3.9	0.1	2.1	-	1.0	2.4	0.0	0.1	4.9
10	1.1	3.7	0.0	2.1	-	1.1	1.8	-0.1	2.4	4.9
11	1.1	1.9	0.1	1.9	-4.4	1.1	0.0	-	1.1	4.9
12	1.1	1.7	4.9	4.5	-2.2	1.1	2.1	-	2.4	4.9
13	-	2.1	0.0	0.0	-2.2	-	2.1	2.8	2.4	4.9
14	1.2	1.8	4.9	4.5	-1.0	1.1	2.1	0.5	4.9	4.9
15	1.0	0.0				1.1	0.0	2.4		
16	-	4.9				-	4.9	4.9		

	IC3
Pin 1	0.0
2	0.8
3	0.8
4	4.5
5	0.1
6	0.0
7	4.7
8	4.5
9	0.1
10	4.8
11	4.8
12	3.7
13	4.7
14	4.6
15	0.0
16	1.8
17	1.8
18	4.8
19	4.8
20	0.0
21	4.8
22	4.7
23	0.1
24	4.7
25	0.1
26	0.0

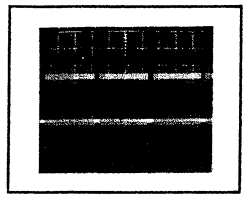
	IC3
Pin 27	0.0
28	4.8
29	0.0
30	0.0
31	1.8
32	2.0
33	2.1
34	4.7
35	4.4
36	1.8
37	0.0
38	4.0
39	0.0
40	0.1
41	0.1
42	0.2
43	4.8
44	3.2
45	0.0
46	4.8
47	4.8
48	0.0

	B	C	E
Q1	0.7	0.0	1.3
2	0.3	0.0	1.0
3	0.1	0.0	0.7
4	4.9	0.8	4.9
5	0.5	0.8	0.0
6	3.9	4.9	3.6
7	3.9	0.0	3.6
9	16.9	23.4	16.4
10	17.0	23.4	16.5
11	14.9	23.4	14.4
12	23.4	0.0	23.4
13	0.7	0.0	0.0
14	4.8	0.0	4.2
15	4.8	0.0	4.2
16	24.0	25.0	23.4
17	23.6	0.0	23.8
18	-8.3	-8.7	-9.0
19	-0.5	-8.3	0.0
22	14.7	14.9	15.4
23	0.6	14.8	0.1

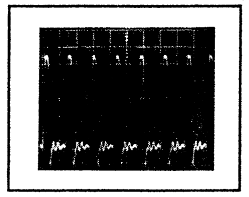
1. 20 µsec/DIV 2V/DIV



2. 20 µsec/DIV 2V/DIV



3. 50 nsec/DIV 1V/DIV



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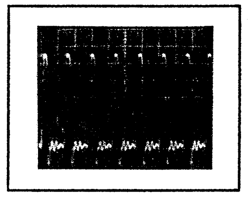
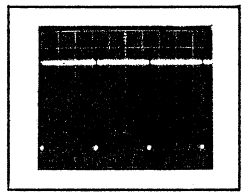


5. 20 µsec/DIV 1V/DIV



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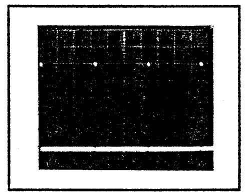

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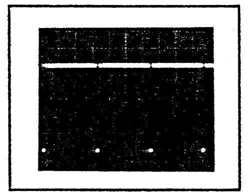

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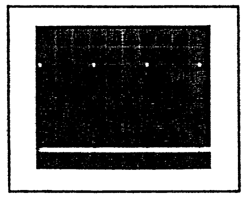

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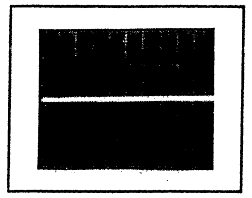

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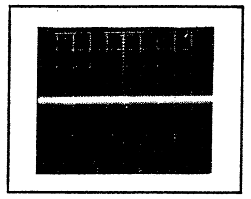

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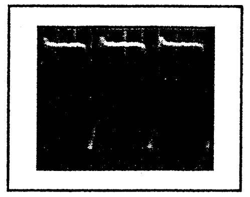
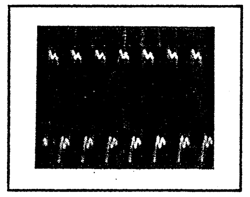
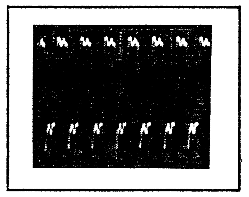


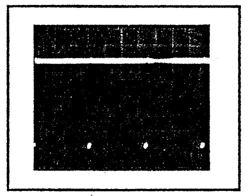
12. 20 nsec/DIV 1V/DIV



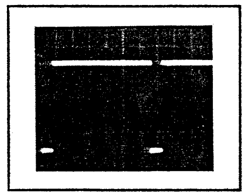
13. 20 nsec/DIV 1V/DIV



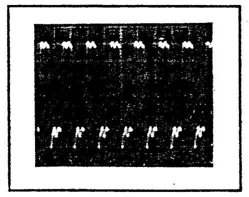
14. 5 msec/DIV 1V/DIV



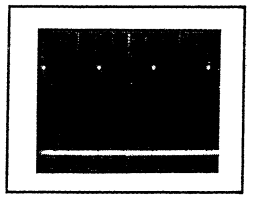
15. 10 µsec/DIV 1V/DIV



16. 50 nsec/DIV 1V/DIV



17. 20 µsec/DIV 1V/DIV



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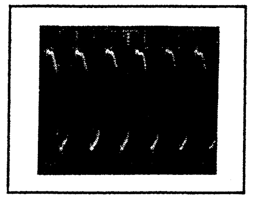
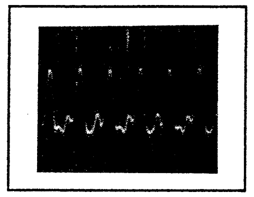
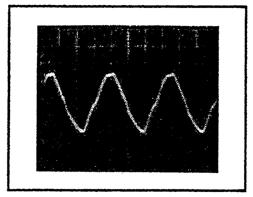


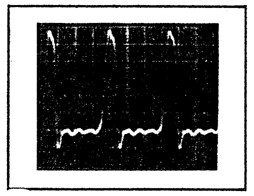
19. 20 nsec/DIV 0.5V/DIV



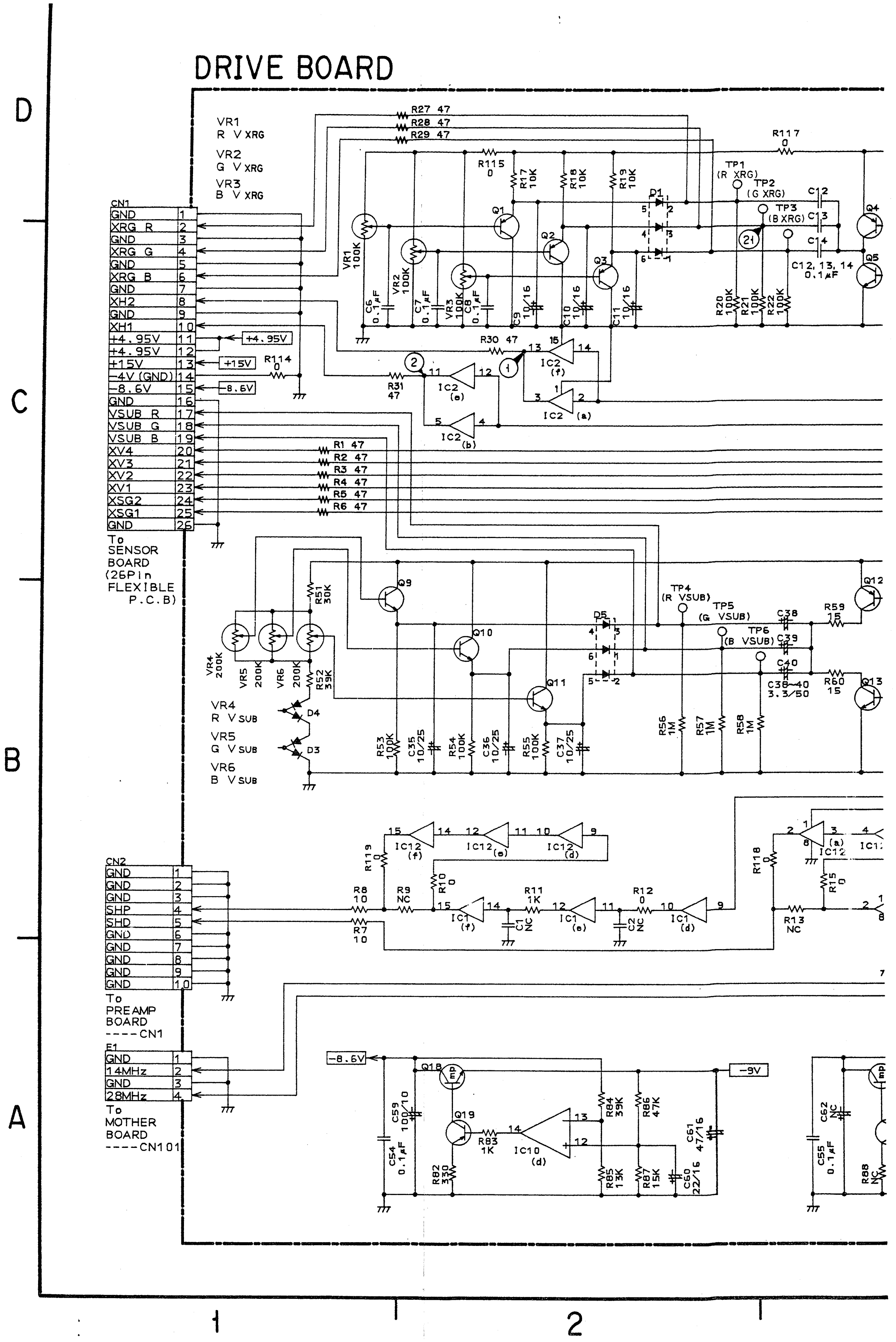
20. 20 nsec/DIV 1V/DIV



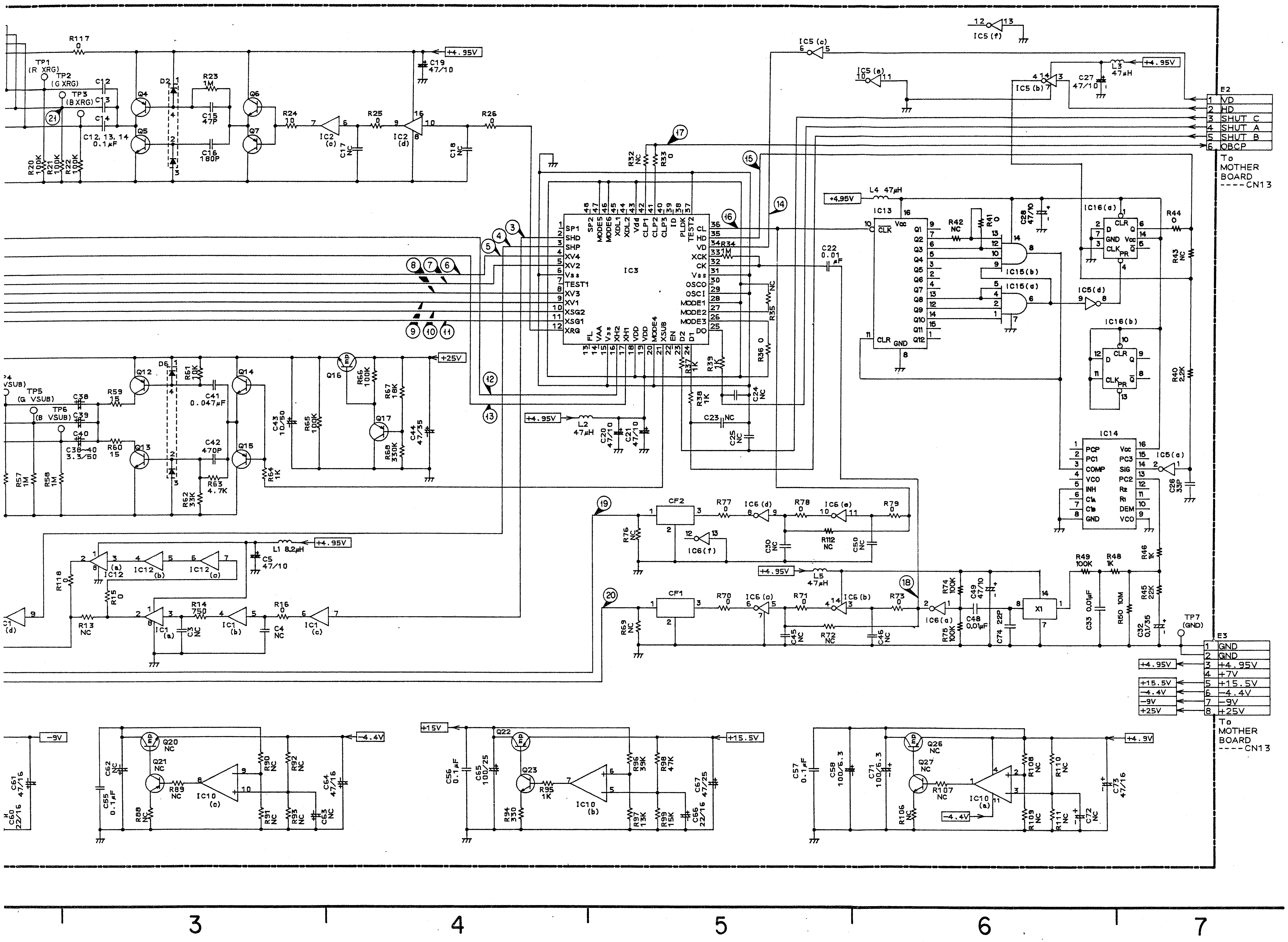
21. 20 nsec/DIV 1V/DIV



DRIVE BOARD


D
C
B
A
1
2
VR1 R V XRG
VR2 G V XRG
VR3 B V XRG
R27 47
R28 47
R29 47
R115 0
R117 0
R17 10K
R18 10K
R19 10K
TP1 (R XRG)
TP2 (G XRG)
TP3 (B XRG)
C12, 13, 14 0.1µF
D1
Q1
Q2
Q3
Q4
Q5
CN1
GND
XRG R
GND
XRG G
GND
XRG B
GND
XH2
GND
XH1
+4.95V
+4.95V
+15V
-4V (GND)
-8.6V
GND
VSUB R
VSUB G
VSUB B
XV4
XV3
XV2
XV1
XSG2
XSG1
GND
R30 47
R31 47
R114 0
IC2 (a)
IC2 (b)
IC2 (e)
IC2 (f)
R1 47
R2 47
R3 47
R4 47
R5 47
R6 47
To SENSOR BOARD (26Pin FLEXIBLE P.C.B)
VR4 R VSUB
VR5 G VSUB
VR6 B VSUB
R51 30K
R52 33K
Q9
Q10
Q11
Q12
Q13
D3
D4
D5
TP4 (R VSUB)
TP5 (G VSUB)
TP6 (B VSUB)
C38-40 3.3/50
R59 15
R60 15
R56 1M
R57 1M
R58 1M
CN2
GND
SHP
SHD
To PREAMP BOARD ----CN1
IC12 (d)
IC12 (e)
IC12 (f)
IC1 (d)
IC1 (e)
IC1 (f)
R7 10
R8 10
R9 NC
R10 0
R11 1K
R12 0
R13 NC
R118
R119 0
E1
GND
14MHz
GND
28MHz
To MOTHER BOARD ----CN101
-8.6V
-9V
Q18
Q19
IC10 (d)
R82 330
R83 1K
R84 39K
R85 13K
R86 47K
R87 15K
C54 0.1µF
C59 100/10
C60 22/16
C61 47/16
C55 0.1µF
C62 NC
R88 NC

SCHEMATIC DIAGRAM OF DRIVE BOARD



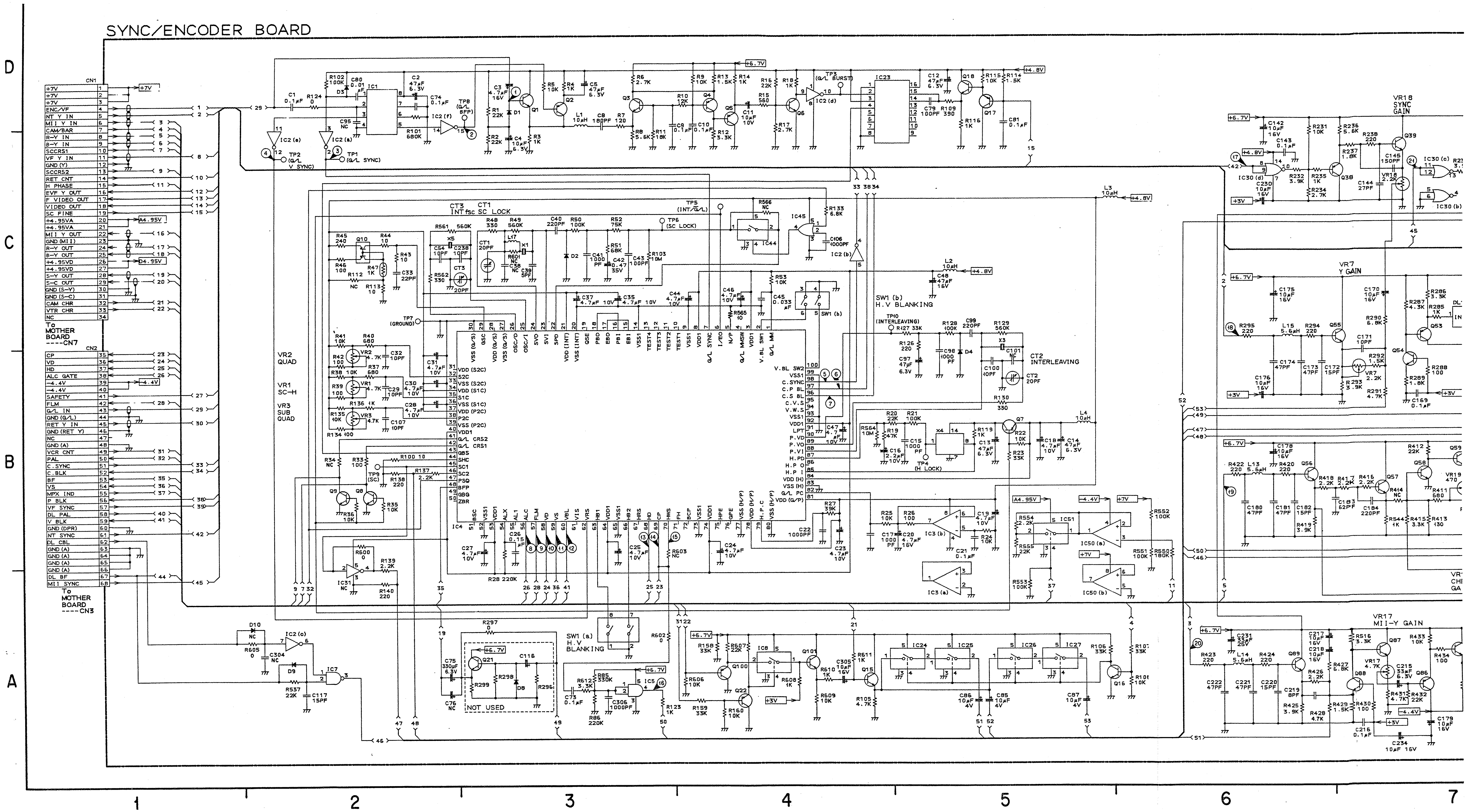
R117 0
TP1 (R XRG)
TP2 (G XRG)
TP3 (B XRG)
C12, 13, 14 0.1μF
Q4
Q5
Q6
Q7
D2
R23 1M
C15 47P
C16 180P
R24 10
IC2 (c)
IC2 (d)
R25 0
R26 0
C17 NC
C18 NC
C19 47/10
+4.95V
IC3
SP1
SHD
SHP
XV4
XV2
Vss
TEST1
XV3
XV1
XSG2
XSG1
XRG
SP2
MODE5
MODE6
XDL1
XDL2
Vdd
CLP1
CLP2
CLP3
ID
PLDK
TEST2
CL
HD
VD
XCK
CK
OSCO
OSCI
MODE1
MODE2
MODE3
DO
R32 NC
R33 0
R34 331M
R35 NC
R36 0
R37 1K
R38 1K
R39 1K
C22 0.01μF
C23 NC
C24 NC
C25 NC
L2 47μH
C20 47/10
C21 47/10
IC5 (c)
IC5 (e)
IC5 (b)
IC5 (f)
C27 47/10
L3 47μH
E2
1 VD
2 HD
3 SHUT C
4 SHUT A
5 SHUT B
6 OBCP
To MOTHER BOARD ----CN13
L4 47μH
IC13
CLK
CLR
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
R42 NC
R41 0
C28 47/10
IC15(b)
IC15(a)
IC16(a)
IC16(b)
R44 0
R43 NC
IC5(d)
R40 2.2K
IC14
PCP
PC1
COMP
VCO
INH
C1A
C1B
GND
Vcc
PC3
SIG
PC2
R2
R1
DEM
VCO
IC5(a)
C26 33P
+25V
Q12
Q13
Q14
Q15
Q16
Q17
D5
R51 10K
C41 0.047μF
C42 470P
R62 33K
R63 4.7K
R64 1K
R65 100K
R66 100K
R67 18K
R68 330K
C43 10/50
C44 47/35
TP5 (G VSUB)
TP6 (B VSUB)
C38
C39
C40
C38-40 3.3/50
R59 15
R60 15
R57 1M
R58 1M
CF2
R77 0
IC6 (d)
R78 0
IC6 (e)
R79 0
IC6 (f)
R76 NC
R112 NC
C30 NC
C50 NC
L1 8.2μH
C5 47/10
IC12 (a)
IC12 (b)
IC12 (c)
R118 0
R15 0
R13 NC
R14 750
R16 0
IC1 (a)
IC1 (b)
IC1 (c)
C3 NC
C4 NC
CF1
R70 0
IC6 (c)
R71 0
IC6 (b)
R73 0
IC6 (a)
R69 NC
R72 NC
C45 NC
C46 NC
L5 4.7μH
R74 100K
R75 100K
C49 47/10
C48 0.01μF
C74 22P
X1
R49 100K
R48 1K
R46 1K
R45 22K
R50 10M
C33 0.01μF
C32 0.1/35
TP7 (GND)
E3
1 GND
2 GND
3 +4.95V
4 +7V
5 +15.5V
6 -4.4V
7 -9V
8 +25V
+15.5V
-4.4V
-9V
To MOTHER BOARD ----CN13
-9V
C61 47/16
C60 22/16
Q20 NC
Q21 NC
C62 NC
C55 0.1μF
R88 NC
R89 NC
IC10 (c)
R90 NC
R91 NC
R92 NC
R93 NC
C63 NC
C64 47/16
+15V
Q22
Q23
C56 0.1μF
C65 100/25
R94 330
R95 1K
IC10 (b)
R96 39K
R97 13K
R98 47K
R99 15K
C66 22/16
C67 47/25
+15.5V
C57 0.1μF
C58 100/6.3
C71 100/6.3
Q26 NC
Q27 NC
R106 NC
R107 NC
IC10 (a)
R108 NC
R109 NC
R110 NC
R111 NC
C72 NC
C73 47/16
+4.9V
3
4
5
6
7

<Index>

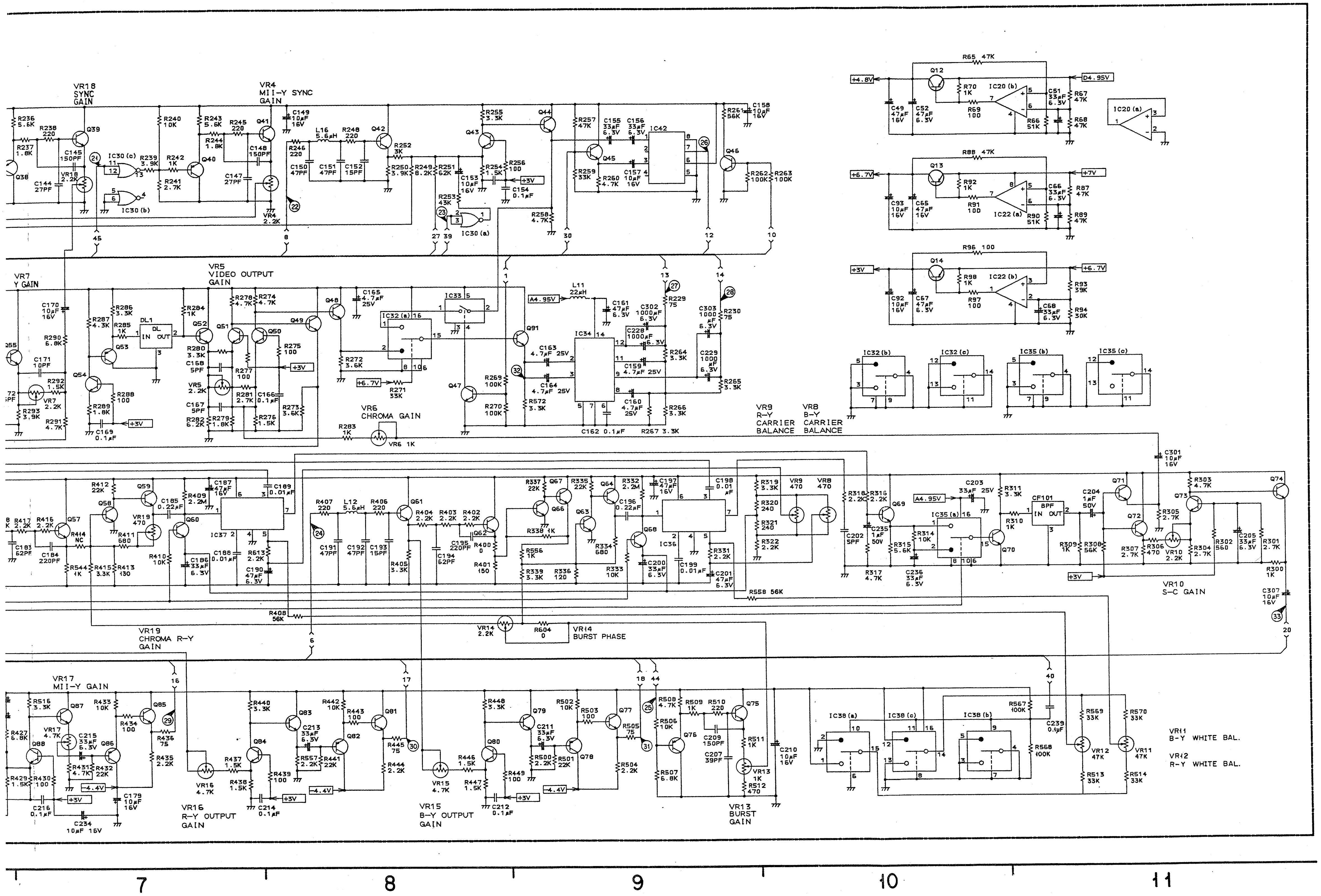
DRIVE BOARD

IC1	B2, B3
IC2	C2, C4
IC3	C5
IC4	C6
IC5	D5, D6,C6,B7
IC6	B5, B6
IC10	A2, A3, A5, A6
IC12	B2, B3
IC13	C3
IC14	B6
IC15	C6
IC16	C6
Q1	D2
Q2	C2
Q3	C2
Q4	D3
Q5	C3
Q6	D3
Q7	C3
Q9	B2
Q10	B2
Q11	B2
Q12	B3
Q13	B3
Q14	B3
Q15	B3
Q16	B4
Q17	B4
Q18	A2
Q19	A2
Q22	A4
Q23	A4
D1	D2
D2	D3
D3	B1
D4	B1
D5	B2
D5	C3

SCHEMATIC DIAGRAM OF SYNC/ENCODER B


SYNC/ENCODER BOARD
CN1
+7V
+7V
+7V
ENC/VF
NT Y IN
MII Y IN
CAM/BAR
R-Y IN
B-Y IN
SCCRS1
VF Y IN
GND (Y)
SCCRS2
RET CNT
H PHASE
EVF Y OUT
F VIDEO OUT
VIDEO OUT
SC FINE
+4.95VA
+4.95VA
MII Y OUT
GND (MII)
R-Y OUT
B-Y OUT
+4.95VD
+4.95VD
S-Y OUT
S-C OUT
GND (S-Y)
GND (S-C)
CAM CHR
VTR CHR
NC
To MOTHER BOARD ----CN7
CN2
CP
VD
HD
ALC GATE
-4.4V
-4.4V
SAFETY
FLM
G/L IN
GND (G/L)
RET Y IN
GND (RET Y)
NC
GND (A)
VCR CNT
PAL
C.SYNC
C.BLK
BF
VS
MPX IND
P BLK
VF SYNC
DL PAL
V BLK
GND (DPR)
NT SYNC
DL CBL
GND (A)
GND (A)
GND (A)
GND (A)
DL BF
MII SYNC
To MOTHER BOARD ----CN3
+6.7V
+4.8V
+4.95V
+3V
-4.4V
+7V
IC1
IC2
IC3
IC4
IC5
IC7
IC8
IC23
IC24
IC25
IC26
IC27
IC30
IC31
IC44
IC45
IC50
IC51
TP1 (G/L SYNC)
TP2 (G/L V SYNC)
TP3 (G/L BURST)
TP4 (H LOCK)
TP5 (INT/G/L)
TP6 (SC LOCK)
TP7 (GROUND)
TP8 (G/L BFP)
TP9 (SC)
TP10 (INTERLEAVING)
CT3 CT1 INT fsc SC LOCK
CT2 INTERLEAVING
VR2 QUAD
VR1 SC-H
VR3 SUB QUAD
SW1 (a) H.V BLANKING
SW1 (b) H.V BLANKING
NOT USED
VR18 SYNC GAIN
VR7 Y GAIN
VR17 MII-Y GAIN
D
C
B
A
1
2
3
4
5
6
7

C/ENCODER BOARD


VR18 SYNC GAIN
VR4 MII-Y SYNC GAIN
IC30 (a)
IC30 (b)
IC30 (c)
IC42
VR7 Y GAIN
VR5 VIDEO OUTPUT GAIN
DL1
IC32 (a)
IC33
IC34
VR6 CHROMA GAIN
VR9 R-Y CARRIER BALANCE
VR8 B-Y CARRIER BALANCE
IC20 (a)
IC20 (b)
IC22 (a)
IC22 (b)
IC32 (b)
IC32 (c)
IC35 (b)
IC35 (c)
+4.8V
D4.95V
+6.7V
+7V
+3V
A4.95V
-4.4V
IC37
IC36
IC35 (a)
CF101 BPF
VR19 CHROMA R-Y GAIN
VR14 BURST PHASE
VR10 S-C GAIN
VR17 MII-Y GAIN
VR16 R-Y OUTPUT GAIN
VR15 B-Y OUTPUT GAIN
VR13 BURST GAIN
IC38 (a)
IC38 (c)
IC38 (b)
VR11 B-Y WHITE BAL.
VR12 R-Y WHITE BAL.
7
8
9
10
11

<Index>

SYNC/ENCODER BOARD

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IC37	B7
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IC51	B5
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Q17	D5
Q18	D5
Q38	C7
Q39	C7
Q41	C8
Q53	C7
Q54	B7
Q57	B7
Q58	B7
Q62	B8
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Q81	A8
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D2	C3
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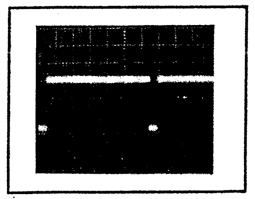
Q3	D3
Q4	D4
Q5	D4
Q6	D4
Q7	B5
Q8	B2
Q9	B2
Q10	C2
Q12	D10
Q13	C10
Q14	C10
Q15	A4
Q22	A4
Q40	C7
Q42	C8
Q43	C8
Q44	C9
Q45	C9
Q46	C9
Q47	B8
Q48	C8
Q49	C8
Q50	C8
Q51	C7
Q52	C7
Q55	C7
Q56	B6
Q59	B7
Q60	B7
Q61	B8
Q63	B9
Q64	B9
Q68	B9
Q69	B10
Q70	B10
Q71	B11
Q72	B11
Q73	B11
Q74	B11
Q75	A9
Q76	A9
Q78	A9
Q79	A9
Q80	A8
Q82	A8
Q83	A8
Q84	A7
Q85	A7
Q86	A7
Q87	A7
Q88	A7
Q89	A6
Q91	C9
Q100	A4
D3	D2
D4	B5
D9	A2
D10	A2

Sync/Encoder board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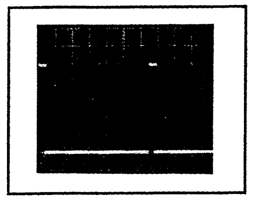
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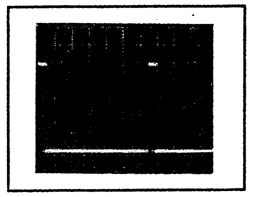
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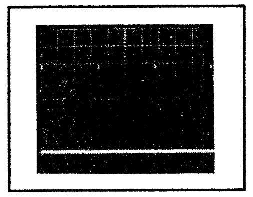
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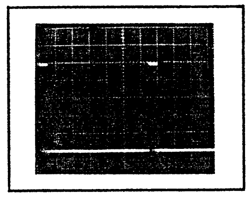
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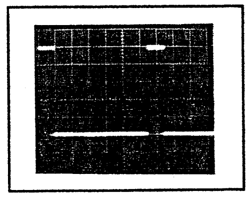
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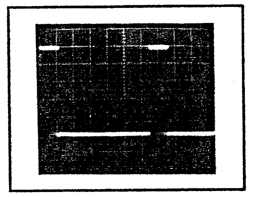
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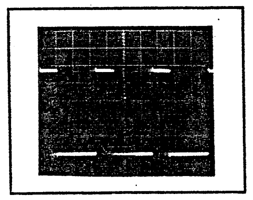
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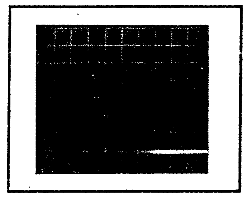
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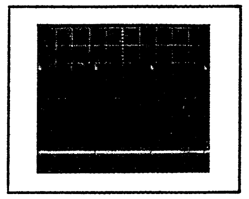
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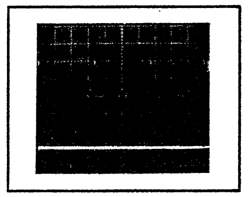
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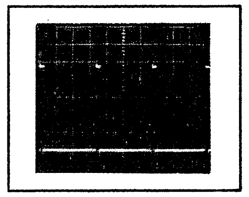
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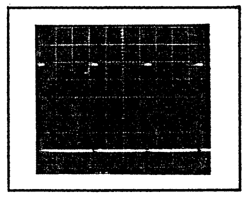
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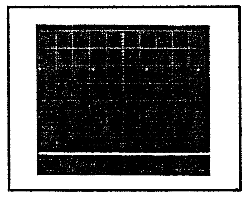
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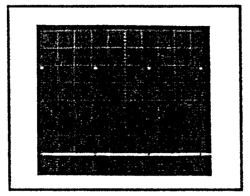
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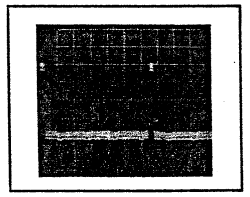
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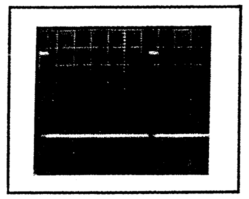
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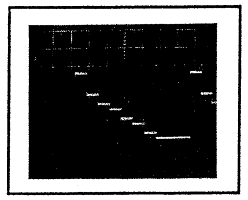
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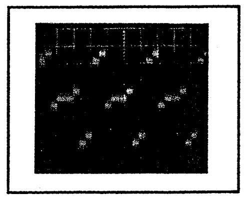
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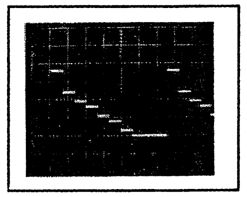
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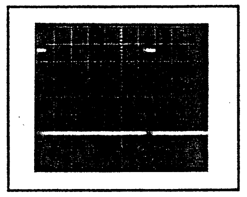
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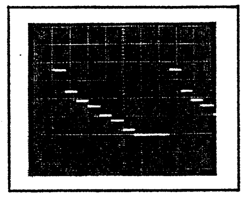
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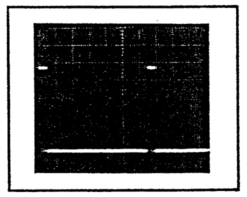
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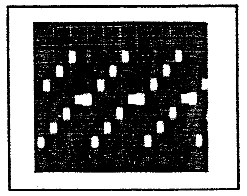
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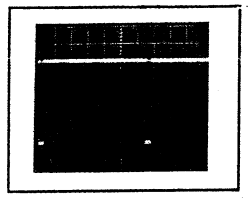
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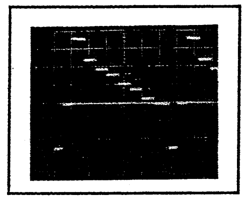
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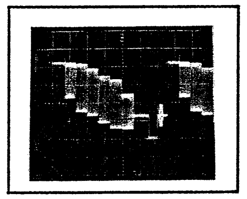
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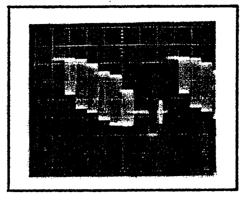
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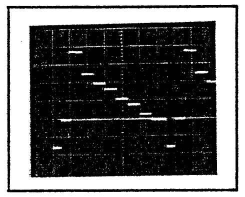
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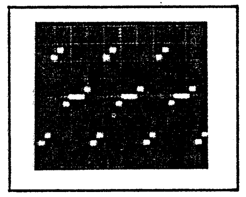
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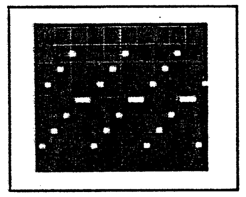
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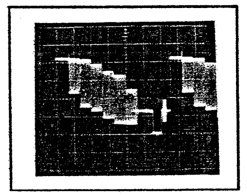
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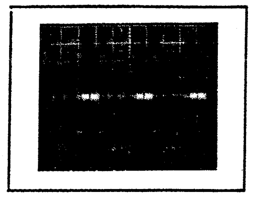

33. 20 µsec/DIV 0.1V/DIV

	B	C	E
Q1	2.3	4.7	2.3
2	1.6	2.3	2.3
3	3.0	5.6	2.3
4	5.0	2.3	5.6
5	2.3	0.0	3.0
6	0.5	4.7	0.0
7	4.7	0.0	4.7
8	0.7	0.0	0.0
12	4.2	4.7	4.9
13	6.3	6.7	7.0
14	6.1	2.9	6.7
15	3.8	6.7	3.2
16	0.0	6.7	0.0
17	1.9	0.0	2.5
18	2.5	4.7	1.9
22	0.6	0.0	0.0
38	2.4	0.0	3.1
39	3.1	6.7	2.4
40	2.5	0.0	4.1
41	3.1	6.7	2.4
42	4.1	6.7	3.4
43	2.9	3.2	2.2
44	3.2	6.7	2.5
45	3.1	6.7	2.5
46	0.6	0.0	0.0
47	0.6	0.0	0.0
48	3.7	6.7	3.0
49	4.9	6.7	4.2
50	2.9	3.7	2.2
51	2.9	4.9	2.2
52	5.9	6.7	5.0
53	4.2	0.0	4.9
54	2.9	4.2	2.2
55	4.1	6.7	3.4
56	4.3	6.7	3.7
57	3.6	6.7	3.0
58	0.6	3.4	0.0
59	3.4	6.7	2.7
60	0.2	2.7	2.7
61	4.3	6.7	3.7
62	3.7	6.7	3.0
63	0.6	3.2	0.0
64	3.2	6.7	2.5
65	3.0	6.7	2.4
68	0.2	2.7	2.7
69	3.8	6.7	3.2
70	3.2	0.0	3.8
71	2.2	6.7	1.5
72	2.2	6.7	1.5
73	2.4	3.1	1.7
74	3.1	6.7	2.4
75	2.4	6.7	1.8

	IC1	IC2	IC3	IC5	IC7	IC8	IC20	IC22	IC23	IC24	IC25	IC26	IC27	IC30	IC31	IC32	IC33	IC34	IC35	IC36	IC37
Pin 1	0.0	4.7	4.2	2.6	1.1	2.9	5.8	6.0	0.0	3.2	3.2	3.2	3.2	4.3	-	-	0.6	1.6	3.2	2.7	2.7
2	1.5	0.0	0.0	2.6	4.2	0.6	0.0	2.9	0.0	3.2	3.2	3.2	3.2	0.4	2.2	3.0	2.5	1.7	3.2	3.3	3.3
3	0.0	-	4.2	0.0	0.0	0.0	5.8	2.9	4.7	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	1.7	0.0	3.3	3.3
4	0.0	4.3	0.0	0.3	3.8	0.0	0.0	0.0	3.5	6.7	6.7	6.7	6.7	4.7	2.3	0.0	0.0	2.4	0.0	0.0	0.0
5	4.7	0.4	3.0	6.7	4.7	6.7	2.5	-	0.1	6.7	6.7	6.7	6.7	0.0	4.7	0.0	6.7	0.0	0.0	2.7	2.7
6	1.3	1.1	3.0				2.5	3.5	4.7					0.0		0.0		2.4	0.0	6.7	6.7
7	0.0	3.5	3.1				4.1	6.1	0.0					0.0		0.0		0.0	0.0	3.8	3.8
8	4.7	0.0	4.7				4.9	7.0	0.0					0.4		0.0		1.7	0.0		
9		4.7							0.0					0.4		0.0		1.9	0.0		
10		0.0							-					4.3		0.0		1.7	3.8		
11		-							0.0					0.4		0.0		1.7	0.0		
12		4.7							4.1					0.4		0.0		1.9	0.0		
13		-							0.1					4.3		0.0		2.1	0.0		
14		-							4.7					4.7		0.0		4.9	0.0		
15		0.0							1.3							3.0			3.2		
16		-							4.7							6.7			4.9		

	IC4
Pin 1	4.7
2	4.7
3	4.7
4	4.7
5	4.7
6	4.6
7	0.0
8	4.7
9	0.0
10	4.7
11	4.7
12	4.7
13	4.7
14	0.0
15	2.3
16	2.3
17	2.3
18	2.3
19	0.0
20	2.2
21	4.7
22	0.0
23	4.5
24	4.7
25	2.2
26	2.0
27	0.0
28	4.7
29	0.9
30	0.0
31	4.7
32	1.2
33	0.3
34	4.7

	IC4
Pin 35	-
36	0.0
37	4.7
38	1.5
39	0.0
40	4.7
41	0.0
42	0.0
43	3.5
44	0.0
45	2.2
46	2.1
47	2.4
48	0.2
49	0.0
50	1.5
51	2.2
52	0.0
53	4.7
54	0.4
55	-
56	-
57	0.0
58	0.1
59	0.1
60	0.4
61	0.0
62	-
63	4.7
64	4.7
65	0.0
66	4.7
67	0.0
68	0.5

	IC4
Pin 69	0.5
70	0.1
71	0.2
72	0.3
73	0.1
74	0.0
75	4.4
76	4.7
77	0.0
78	4.7
79	0.5
80	0.0
81	4.7
82	0.0
83	0.0
84	4.7
85	0.0
86	4.7
87	0.0
88	-
89	4.7
90	4.7
91	4.7
92	4.7
93	0.0
94	0.1
95	0.1
96	1.1
97	1.0
98	0.4
99	0.0
100	4.7

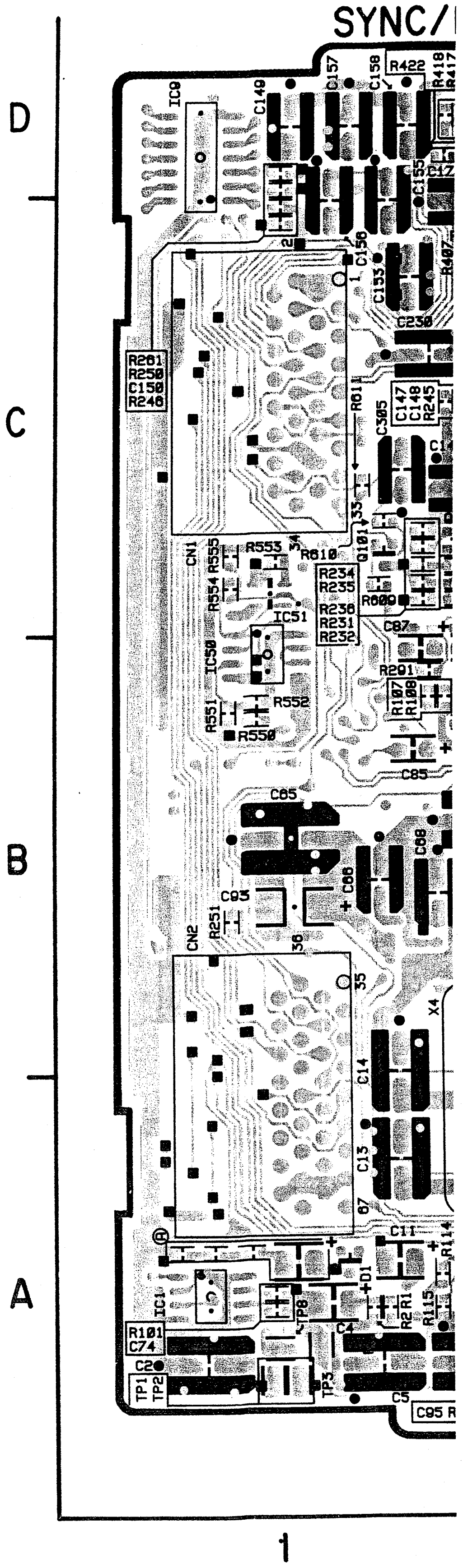
	IC50	IC51
Pin 1	3.4	3.4
2	3.4	3.0
3	3.4	0.0
4	-4.4	0.0
5	0.0	4.9
6	0.0	
7	0.0	
8	7.0	

	Q10
1	4.2
2	4.3
3	3.7
4	0.9
5	3.7
6	3.7

	B	C	E
Q76	1.8	0.0	2.4
77	0.7	6.7	0.0
78	0.0	-4.4	0.7
79	3.9	6.7	3.1
80	2.9	3.9	2.2
81	0.7	6.7	0.0
82	0.0	-4.4	0.7
83	3.8	6.7	3.1
84	2.9	3.8	2.2
85	0.7	6.7	0.0
86	0.0	-4.4	0.7
87	3.7	6.7	3.0
88	2.9	3.7	2.2
89	4.1	6.7	3.4
91	3.0	6.7	2.3
100	0.0	0.0	0.6
101	2.9	6.7	2.3

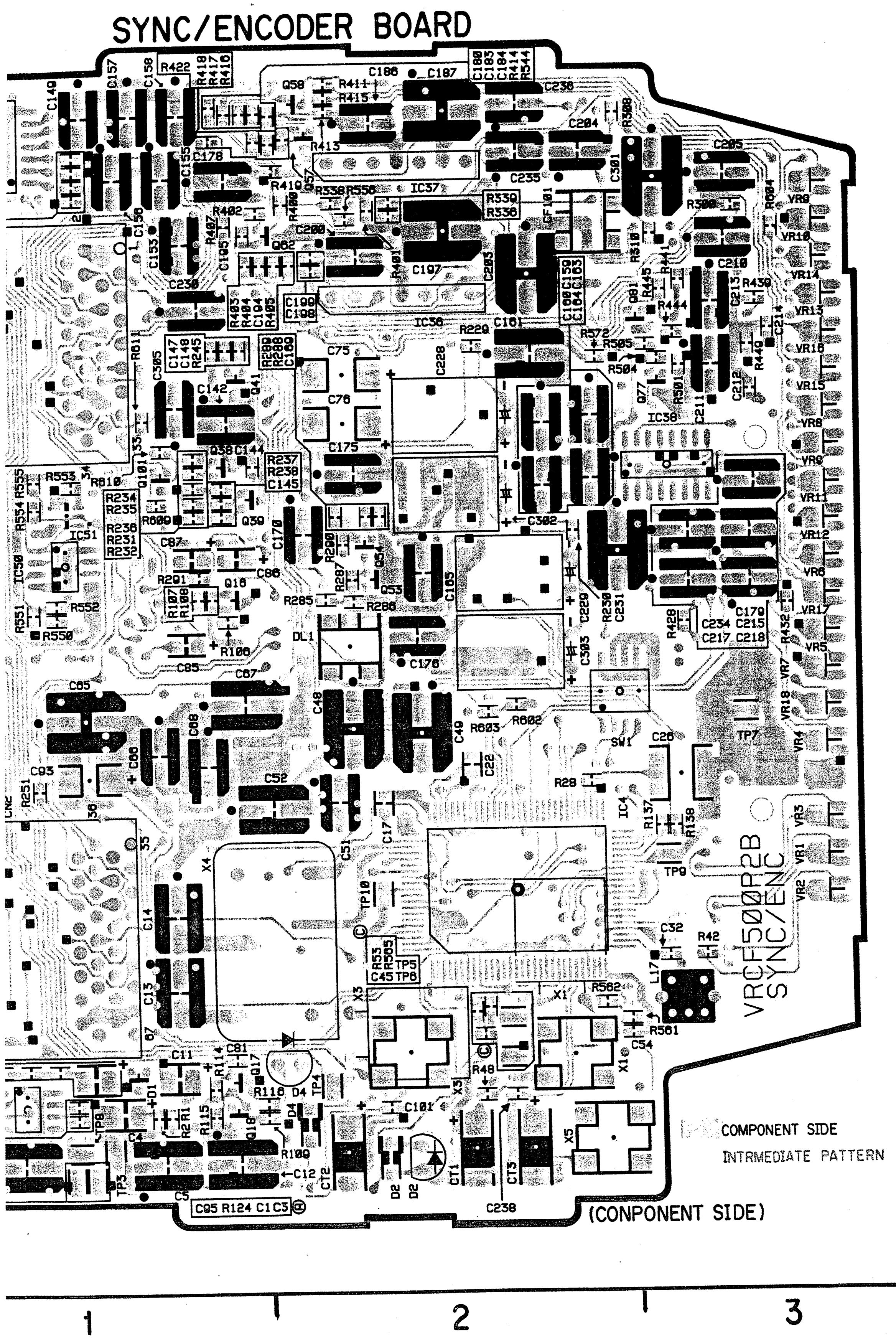
	Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
IC42	3.1	0.0	2.7	0.0	0.0	6.7	2.4	0.0

COMPONENT SIDE


SYNC/
D
C
B
A
1
IC8
C149
C157
C158
R422
R418
R417
C156
C155
C133
R407
C230
R201
R250
C150
R246
R611
C305
C147
C148
R245
CN1
R555
R554
R553
R610
Q101
R234
R235
R809
R236
R231
R232
IC51
C87
IC50
R552
R551
R550
R201
R107
R108
C85
C65
C68
C08
C93
R251
CN2
X4
C14
C13
C11
IC1
D1
TP8
R101
C74
C2
C4
R2R1
R115
R114
TP1
TP2
TP3
C5
C95

CONDUCTOR VIEW OF SYNC/ENCODER BOARD

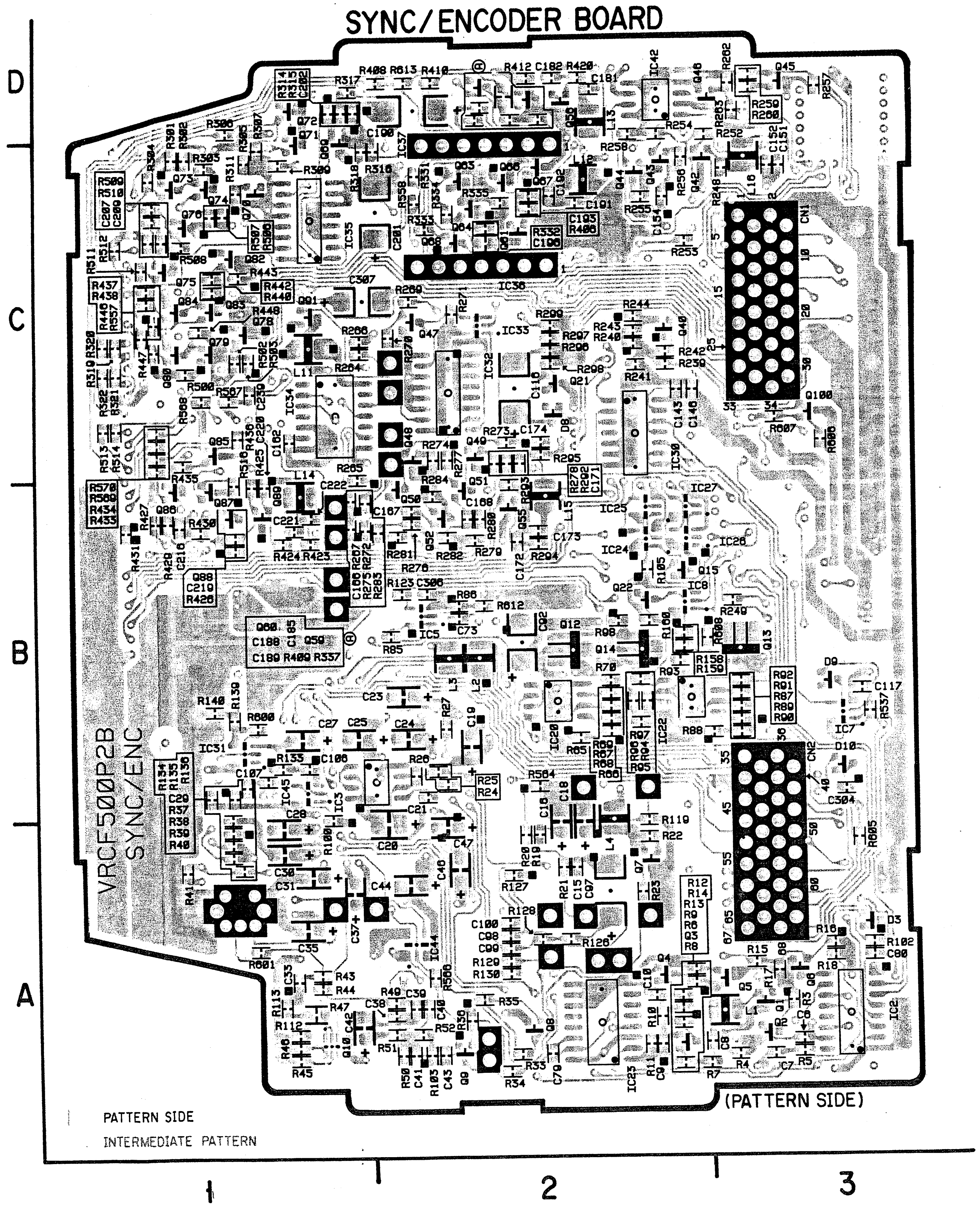
SIDE


SYNC/ENCODER BOARD
VRCF500P2B SYNC/ENC
COMPONENT SIDE
INTRMEDIATE PATTERN
(CONPONENT SIDE)
1
2
3

<Index>
SYNC/ENCODER BOARD
COMPONENT SIDE

IC1	A1
IC4	B2
IC36	C2
IC37	C2
IC38	C3
IC50	B1
IC51	C1
Q16	B1
Q17	A1
Q18	A1
Q38	C1
Q39	C1
Q41	C1
Q53	B2
Q54	B2
Q57	C2
Q58	D2
Q62	C2
Q77	C3
Q81	C3
Q101	C1
D1	A1
D2	A2
D4	A2

PATTERN SIDE

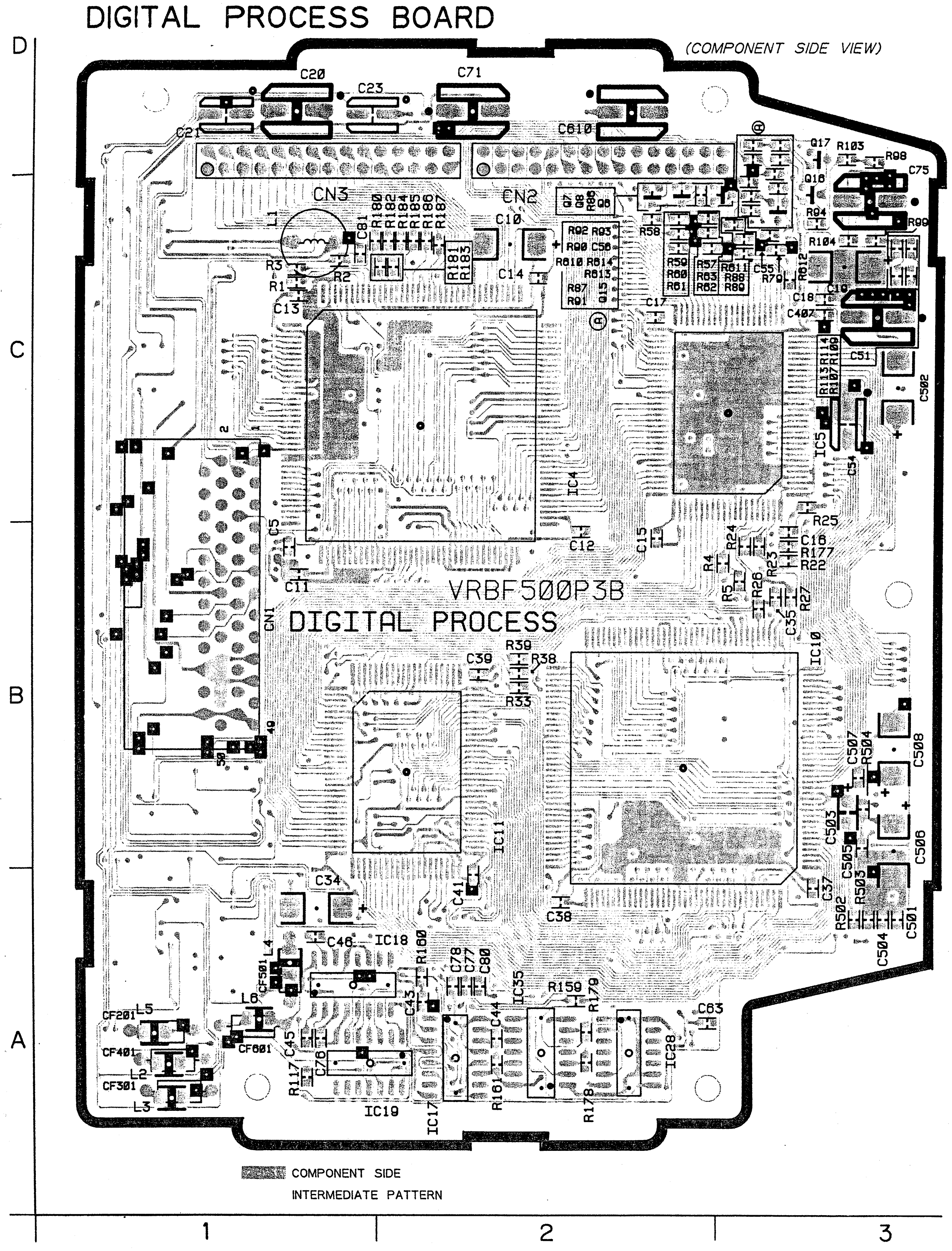

SYNC/ENCODER BOARD
VRCF500P2B SYNC/ENC
(PATTERN SIDE)
PATTERN SIDE
INTERMEDIATE PATTERN
D
C
B
A
1
2
3

<Index>
SYNC/ENCODER BOARD
PATTERN SIDE

IC2	A3
IC3	B1
IC5	B2
IC7	B3
IC8	B2
IC20	B2
IC22	B2
IC23	A2
IC24	B2
IC25	B2
IC26	B3
IC27	B2
IC30	C2
IC31	B1
IC32	C2
IC33	C2
IC34	C1
IC35	C1
IC42	D2
Q1	A3
Q2	A3
Q3	A2
Q4	A2
Q5	A3
Q6	A3
Q7	A2
Q8	A2
Q9	A2
Q10	A1
Q12	B2
Q13	B3
Q14	B2
Q15	B2
Q22	B2
Q40	C2
Q42	C2
Q43	C2
Q44	C2
Q45	D3
Q46	D2
Q47	C2
Q48	C2
Q49	C2
Q50	B2
Q51	B2
Q52	B2
Q55	B2
Q56	D2
Q59	B1
Q60	B1
Q61	C2
Q63	C2
Q64	C2
Q68	C2
Q69	C1
Q70	C1
Q71	D1
Q72	D1
Q73	C1
Q74	C1
Q75	C1
Q76	C1
Q78	C1
Q79	C1
Q80	C1
Q82	C1
Q83	C1
Q84	C1
Q85	C1
Q86	B1
Q87	B1
Q88	B1
Q89	B1
Q91	C1
Q100	C3
D3	A3
D9	B3
D10	B3

CONDUCTOR VIEW OF DIGITAL PROCESS BOARD

COMPONENT SIDE

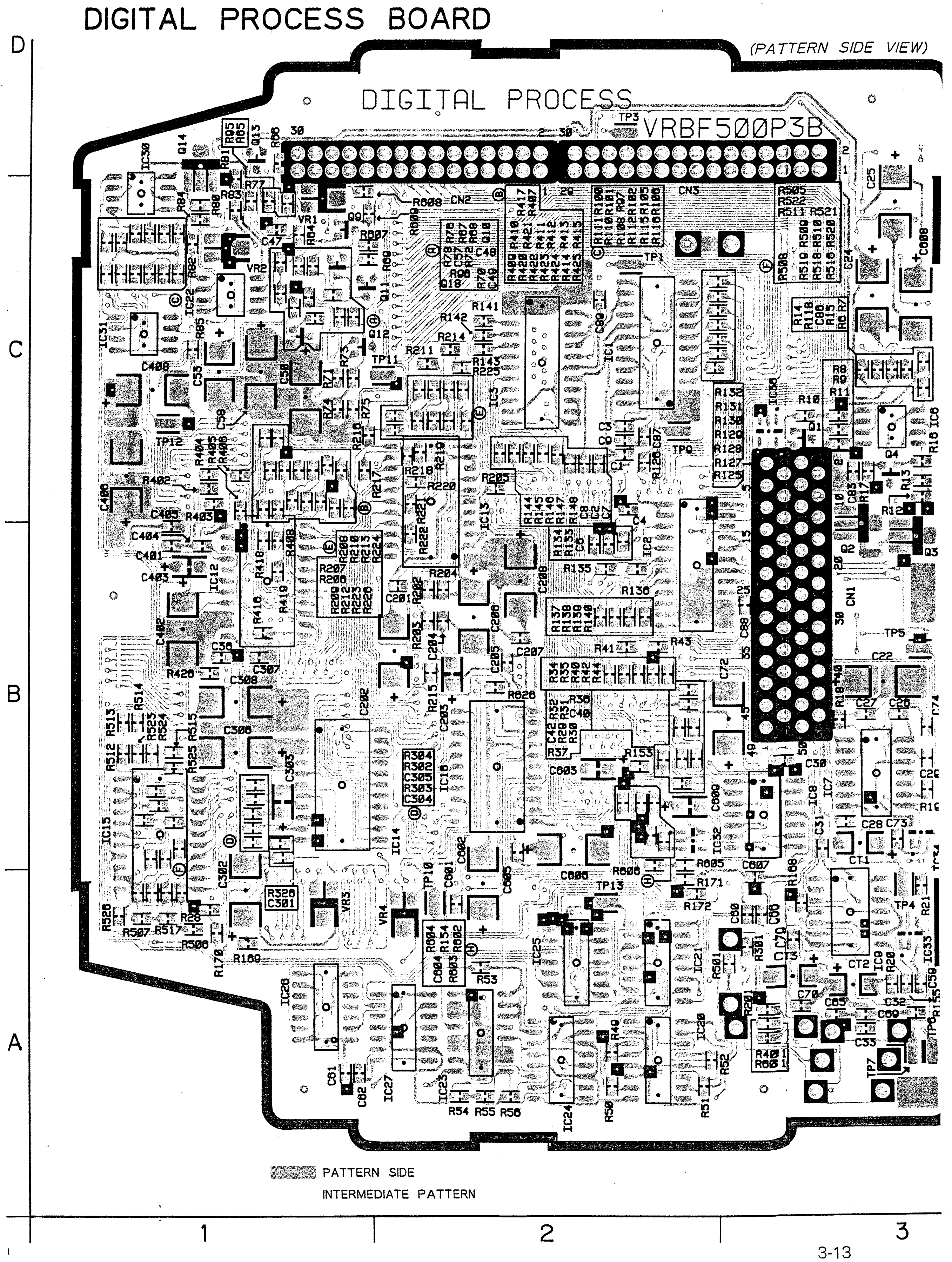

DIGITAL PROCESS BOARD
(COMPONENT SIDE VIEW)
VRBF500P3B
DIGITAL PROCESS
CN1
CN2
CN3
IC4
IC5
IC10
IC11
IC17
IC18
IC19
IC28
IC35
D
C
B
A
1
2
3

▨ COMPONENT SIDE
INTERMEDIATE PATTERN

<Index>
DIGITAL BOARD
COMPONENT SIDE

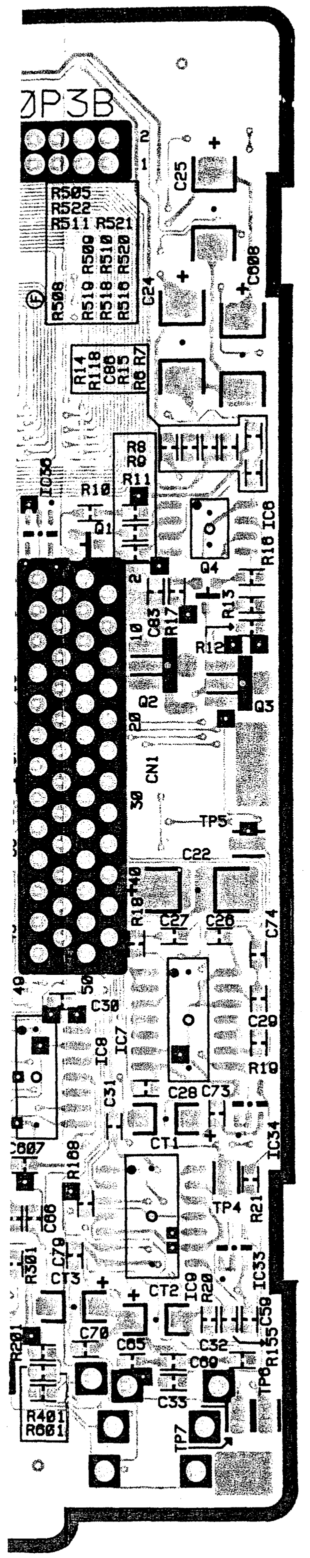
IC4	C2
IC5	C3
IC10	B3
IC11	B2
IC17	A2
IC18	A2
IC19	A1
IC28	A2
IC35	A2
Q6	C2
Q7	C2
Q8	C2
Q15	C2
Q16	C3
Q17	D3

PATTERN SIDE


DIGITAL PROCESS BOARD
(PATTERN SIDE VIEW)
DIGITAL PROCESS
VRBF500P3B
CN1
CN2
CN3
TP1
TP3
TP4
TP5
TP7
TP9
TP11
TP12
TP13
D
C
B
A
1
2
3

▨ PATTERN SIDE
INTERMEDIATE PATTERN

PATTERN SIDE VIEW)



<Index>

DIGITAL BOARD
PATTERN SIDE

IC1	C2
IC2	B2
IC3	C2
IC6	C3
IC7	B3
IC8	B3
IC9	B3
IC13	C2
IC14	B2
IC15	B1
IC16	B2
IC21	A2
IC22	C1
IC24	A2
IC25	A2
IC26	A1
IC27	A2
IC30	D1
IC31	C1
IC32	B2
IC33	A3
IC34	B3
IC36	C3
Q1	C3
Q2	B3
Q3	B3
Q4	C3
Q9	C1
Q10	C2
Q11	C2
Q12	C1
Q13	D1
Q14	A1
Q18	C2

	IC6	IC7	IC8	IC9	IC21	IC22	IC24	IC25	IC26	IC27	IC30	IC31	IC32	IC33	IC34	IC36
Pin 1	1.0	2.5	4.3	1.9	1.6	4.1	0.0	0.0	4.5	4.5	0.1	4.5	2.9	1.9	2.1	-
2	2.5	2.5	0.4	4.5	0.0	3.5	0.0	0.0	0.0	0.0	0.1	3.1	4.8	1.9	2.1	0.5
3	2.5	2.1	1.1	-	4.5	3.5	4.5	4.5	0.0	0.0	2.9	3.3	0.0	0.0	0.0	0.0
4	-4.4	2.1	3.5	2.0	1.6	-4.4	0.0	4.5	0.0	0.0	0.0	0.0	0.0	1.9	2.0	4.1
5	0.0	2.1	0.1	0.1	0.0	-0.2	0.0	0.1	0.0	0.0	3.1	3.1	4.8	4.5	4.5	4.5
6	-	1.9	4.3	2.0	4.5	2.9	4.5	0.0	0.0	0.0	0.0	2.6				
7	0.7	0.0	0.0	0.0	1.6	2.3	0.0	0.0	0.0	0.0	4.5	4.5				
8	4.9	2.1	2.3	4.4	0.0	7.0	0.0	1.6	1.8	1.8	6.7	6.7				
9		2.1	2.4	0.1	4.5		0.0	2.6	4.5	4.5						
10		2.1	4.5	4.6	4.5		4.5	2.6	0.0	0.0						
11		2.1	0.0	4.4	4.5		0.0	1.9	0.0	0.0						
12		4.5	4.1	0.1	-		0.0	0.0	0.0	0.0						
13		2.2	0.4	4.4	-		4.5	0.0	0.0	0.0						
14		4.5	4.5	4.5	4.5		0.0	4.5	4.5	4.5						
15					0.0		0.0									
16					4.5		4.5									

	IC3	IC1	IC2	IC13	IC15	IC14	IC16	IC18	IC19	IC17	IC24	IC35
Pin 1	0.0	0.0	0.0	4.5	4.5	4.5	4.5	0.1	1.2	0	4.5	4.5
2	0.0	0.0	0.0	4.8	4.8	4.8	4.8	2.8	1.8	2.6	0	3.4
3	-	1.5	1.6	4.8	4.8	4.8	4.8	4.5	2.6	4.5	0	3.4
4	1.7	1.7	1.6	0.1	2.9	2.9	2.9	0	1.5	0	0	3.4
5	1.0	1.5	2.0	2.9	2.9	2.9	2.9	4.6	0.8	4.3	0	3.4
6	0.4	0.8	0.1	2.1	2.1	2.1	2.1	1.5	1.9	1.8	0	3.4
7	3.2	2.6	3.8	1.7	1.7	1.7	1.7	1.7	0	2.7	0	0
8	-	0.0	0.0	4.3	4.3	4.1	4.1	0	4.5	0	2.0	2.0
9	0.0	0.0	-	0.0	0.0	0.0	0.0	0.7	0.8	1.2	4.5	4.5
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	0.8	3.2	0.1	3.4
11	4.8	-	-	0.0	0.0	0.0	0.0	4.5	3.4	4.5	0.1	3.4
12	1.9	1.9	1.9	0.4	1.1	1.0	1.0	4.6	3.4	4.3	0.1	3.4
13	4.8	4.8	4.8	0.0	1.7	1.1	1.1	4.5	0	4.5	0.1	3.4
14	4.8	4.8	4.8	1.7	0.9	1.1	0.6	2.1	4.5	2.0	4.5	4.5
15	4.8	4.8	4.8	1.7	0.8	2.3	2.3	0.1		0		
16	4.8	4.8	4.8	1.2	0.9	2.5	2.5	0.2		0.1		
17	2.5	2.5	2.5	1.1	1.4	1.3	-					
18	4.8	4.8	4.8	1.2	1.3	2.2	2.2					
19	0.7	0.7	0.7	1.2	1.3	2.2	2.2					
20	0.0	0.0	0.0	1.0	1.2	0.0	1.6					
21	0.0	0.0	0.0	0.7	3.3	0.9	0.9					
22	0.0	0.0	0.0	2.2	2.2	2.2	2.2					
23	0.6	0.5	0.5									
24	-	0.0	0.0									

	B	C	E
Q1	1.0	4.2	0.4
2	4.2	4.8	4.9
3	4.2	4.5	4.9
4	0.7	4.2	0.1
6	1.2	6.7	0.6
7	1.2	6.7	0.6
8	1.2	6.7	0.6
9	1.2	3.9	0.6
10	3.9	6.7	3.4
11	3.5	6.7	2.8
12	0.4	3.1	3.1
13	2.3	0	2.9
14	6.3	6.7	7.0
15	1.5	4.2	0.9
16	4.1	6.7	3.6
17	3.6	6.7	2.9
18	0.4	3.1	3.1

	IC4	IC5	IC10	IC11
Pin 1	-	4.5	1.7	0
2	4..5	0.0	1.7	-
3	2.1	4.5	1.7	2.2
4	1.7	0.0	1.7	0
5	2.3	4.5	1.7	4.5
6	2.9	0.0	1.7	0
7	0.8	2.0	1.8	1.6
8	-	1.9	1.7	1.6
9	0	2.2	0.1	4.5
10	0	2.4	3.4	4.5
11	0	1.8	4.5	0
12	4.5	4.0	0.0	4.5
13	4.5	0.0	4.5	4.6
14	2.5	0.0	0.0	4.2
15	1.6	0.0	2.0	4.6
16	2.7	4.5	1.9	4.4
17	2.7	0.0	2.2	4.5
18	1.9	4.5	2.4	4.4
19	4.0	0.0	1.8	4.4
20	0	1.9	4.0	4.7
21	0	1.8	0.0	4.5
22	0	2.2	0.0	0
23	4.5	2.6	0.0	4.5
24	0	1.0	4.5	4.5
25	0	3.8	0.0	4.5
26	1.9	0.0	1.9	4.5
27	1.7	0.0	1.8	4.5
28	2.3	0.0	2.2	4.5
29	-	4.5	2.6	4.5
30	0.8	0.0	1.0	4.5
31	3.7	0.0	3.8	4.5
32	0	0.0	0.0	0
33	0	0.0	0.0	0.4
34	0	3.7	0.0	3.4
35	0	1.0	1.8	4.3
36	-	2.7	2.3	2.3
37	-	2.3	2.3	4.6
38	4.5	1.7	4.5	4.5
39	0	1.7	0.0	0
40	0	1.9	2.2	0.5
41	0	0.0	0.0	0.4
42	0	4.5	0.0	0.4
43	3.0	0.0	-	3.4
44	0.6	0.0	4.5	3.4
45	-	0.0	0.0	3.4
46	1.7	4.0	0.0	4.3
47	1.6	1.8	1.0	2.3
48	0	2.7	1.1	4.4
49	4.5	1.6	1.5	4.4
50	0	2.6	2.3	4.4

	IC4	IC5	IC10	IC11
Pin 51	0	0.0	2.5	0
52	0	4.5	1.3	4.5
53	0	0.0	2.2	0
54	3.8	0.0	2.2	0
55	-	0.0	1.6	0
56	2.4	3.9	1.6	4.5
57	1.7	0.8	1.0	2.0
58	1.6	2.9	4.5	2.0
59	0	2.3	0.0	2.0
60	0	1.7	4.5	2.2
61	4.5	2.0	0.0	2.7
62	0	0.0	1.0	1.0
63	0	4.5	1.1	4.2
64	1.6	1.9	1.1	0
65	0	1.9	2.3	0
66	0	1.9	2.5	0
67	4.6	1.9	1.3	4.6
68	0	1.9	2.2	0
69	0	2.0	2.2	2.1
70	0	2.0	1.6	2.0
71	3.2	2.1	0.9	2.1
72	0.6	2.1	4.5	2.0
73	1.6	2.1	0.0	1.9
74	1.4	4.5	3.5	1.9
75	0	0.0	1.0	1.9
76	4.5	0.0	1.2	1.9
77	4.0	0.0	1.2	1.9
78	4.5	0.0	1.1	1.8
79	4.5	4.2	1.2	0
80	4.4	0.9	1.7	4.5
81	4.3	0.0	1.7	0
82	4.5	4.5	0.0	3.4
83	4.5	2.8	0.4	0.1
84	4.4	2.3	4.5	1.7
85	4.4	2.0	0.0	1.7
86	4.4	2.0	4.5	1.9
87	4.5	2.1	0.0	1.3
88	4.4	0.0	3.3	1.7
89	4.5	4.5	1.5	1.8
90	4.2	4.5	1.3	1.7
91	4.6	4.1	1.3	1.7
92	0.4	0.0	1.4	1.7
93	0	4.5	0.9	1.7
94	4.7	-	0.8	0
95	4.7	2.0	0.9	4.5
96	0.2	4.5	1.7	0
97	0	0.0	1.1	0
98	4.5	0.0	4.5	0
99	4.5	0.0	0.0	1.5
100	4.2	0.0	0.9	4.5

	IC4	IC5	IC10	IC11
Pin 101	4.2		1.6	
102	4.2		2.2	
103	4.5		2.2	
104	4.5		1.3	
105	4.5		2.5	
106	1.9		2.3	
107	4.3		1.1	
108	0.1		1.1	
109	0		1.0	
110	0		4.5	
111	1.1		0.0	
112	0.0		0.0	
113	4.9		2.2	
114	4.5		2.2	
115	4.5		2.0	
116	4.5		2.0	
117	1.9		4.5	
118	4.5		0.0	
119	0		4.5	
120	1.6		4.5	
121	1.7		4.5	
122	2.1		4.5	
123	2.2		4.5	
124	2.2		4.5	
125	2.2		4.5	
126	2.2		4.5	
127	2.2		4.5	
128	1.5		0.0	
129	4.5		4.5	
130	1.6		0.0	
131	1.9		4.7	
132	1.8		4.6	
133	1.9		4.0	
134	1.9		4.5	
135	2.0		4.4	
136	1.9		4.5	
137	0		4.5	
138	4.3		4.5	
139	4.1		4.5	
140	4.3		4.5	
141	1.5		0.0	
142	4.5		4.1	
143	0		4.4	
144	2.0		1.5	
145	0		0.0	
146	0.7		1.7	

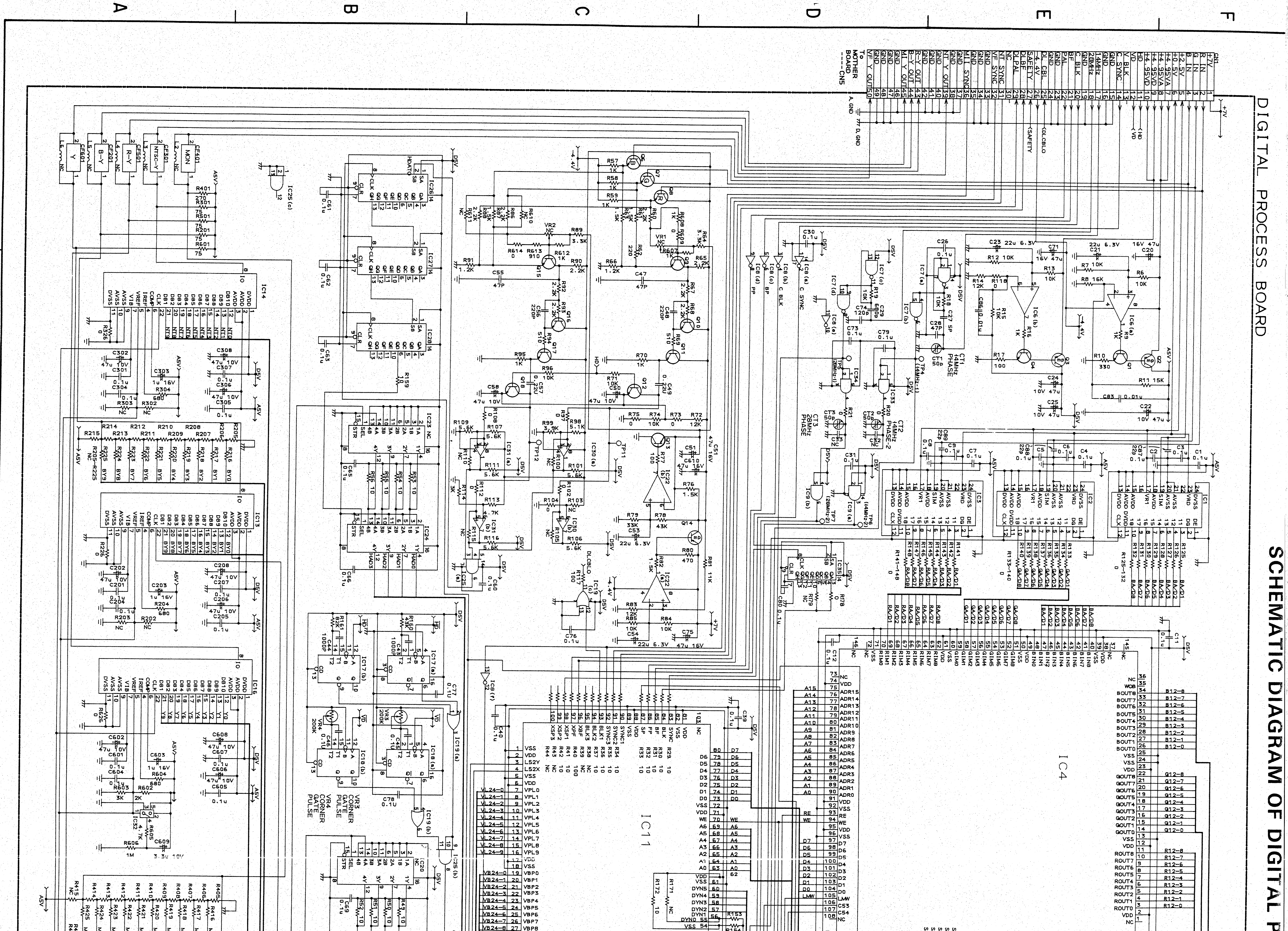
<Index>

DIGITAL BOARD

IC4	E4
IC5	E6
IC10	C6
IC11	C4
IC17	B3
IC18	B4
IC19	B4, C3
IC28	B2
IC35	D3
Q6	C1
Q7	C1
Q8	C1
Q15	C2
Q16	C2
Q17	C2
IC1	F3
IC2	E3
IC3	E3
IC6	E2
IC7	D2
IC8	C3, D2
IC9	C7, D3, D7
IC13	B3
IC14	B2
IC15	B6
IC16	B3
IC21	B5
IC22	C2, C3
IC24	B3
IC25	B1, B3, B4
IC26	B1
IC27	B2
IC30	C2, C3
IC31	C2, C3
IC32	A4
IC33	D2
IC34	D2
IC36	D5
Q1	E2
Q2	F2
Q3	E2
Q4	E2
Q9	C2
Q10	C2
Q11	C2
Q12	C2
Q13	C2
Q14	C3
Q18	C2

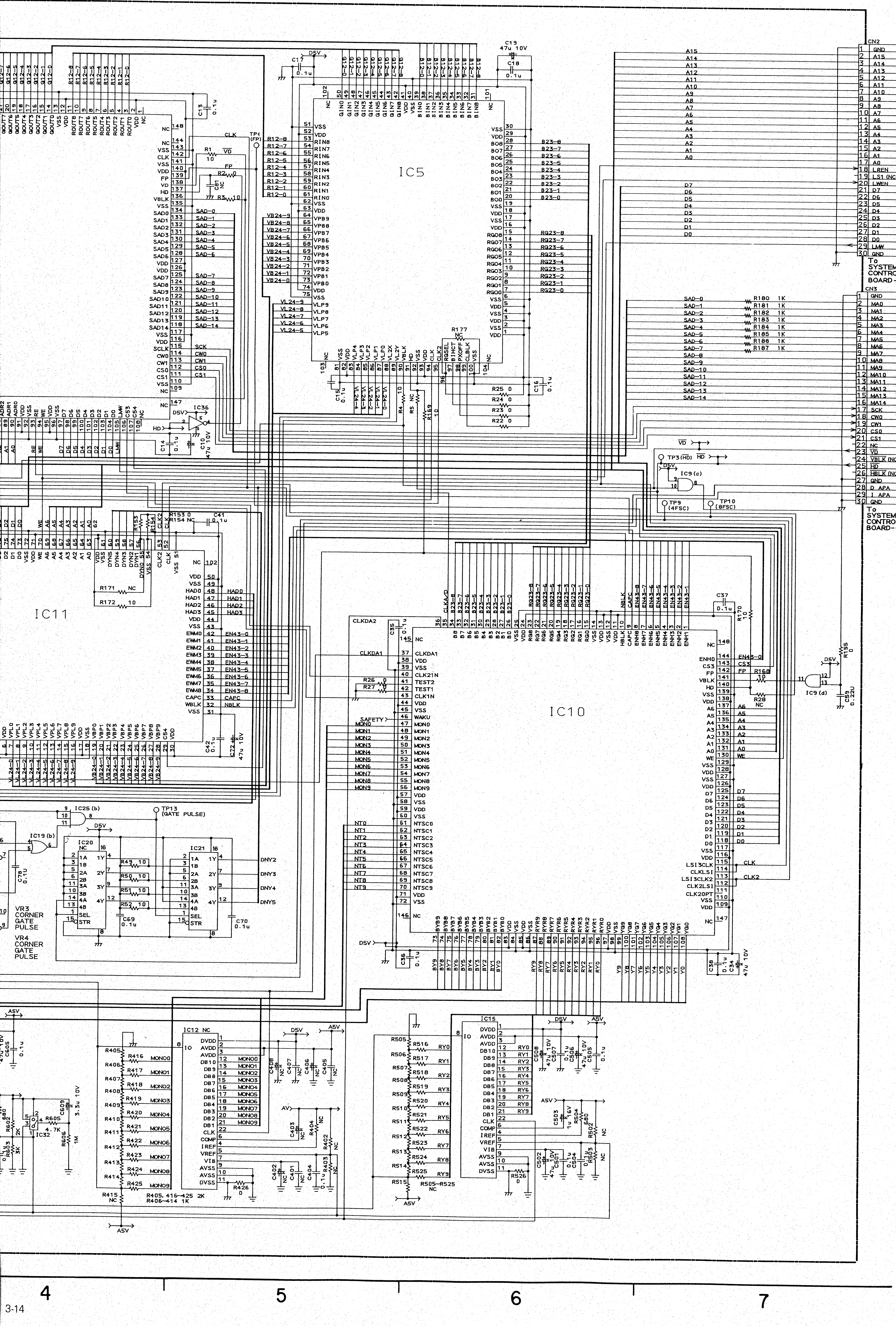
SCHEMATIC DIAGRAM OF DIGITAL P

DIGITAL PROCESS BOARD



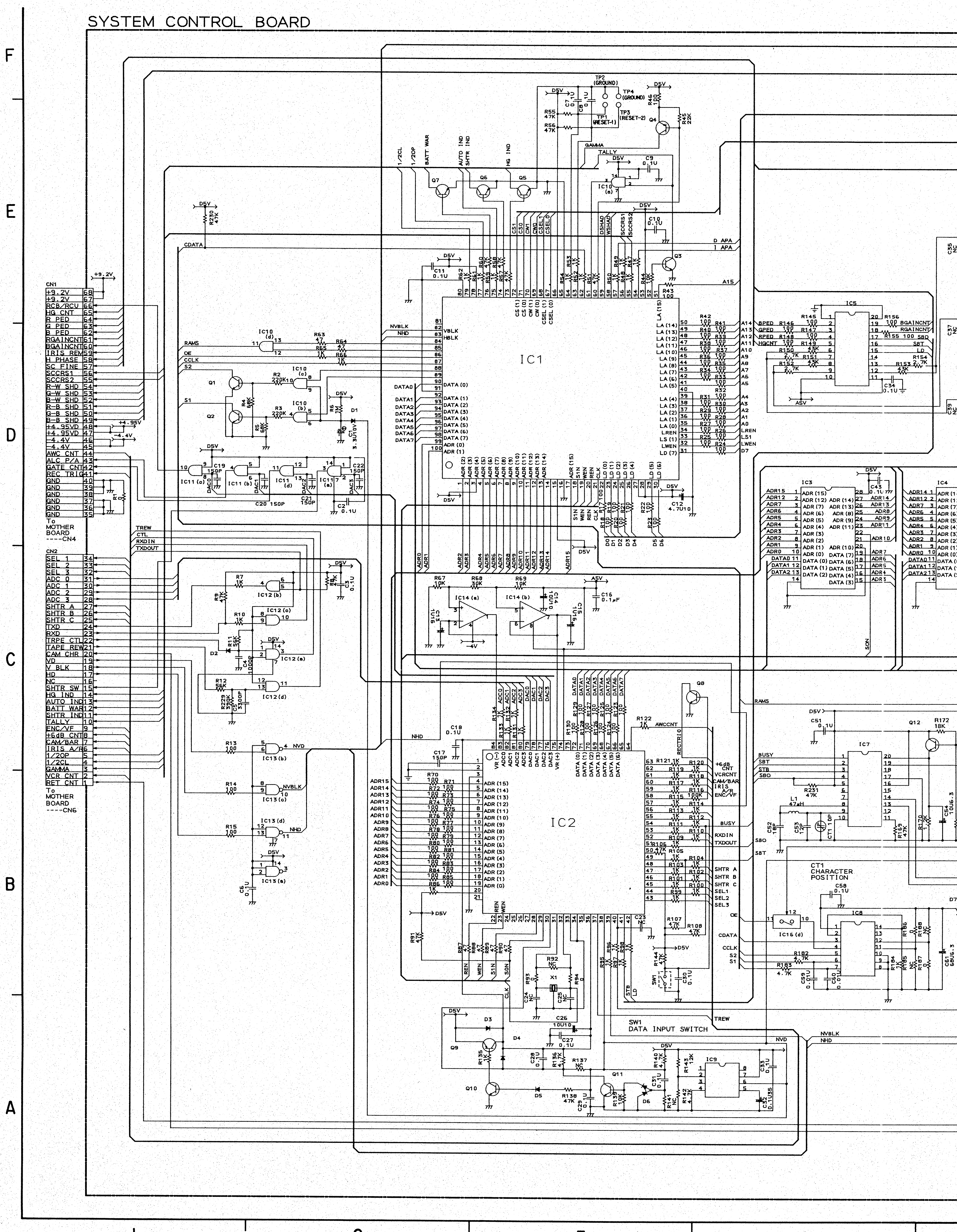
A
B
C
D
E
F
1
2
3
4
To MOTHER BOARD ----CN5
CN1
+7V
R IN
G IN
B IN
+2.5V
+0.5V
+4.95VA
+4.95VA
+4.95VD
+4.95VD
HD
VD
V BLK
C SYNC
GND
GND
14MHz
28MHz
GND
C BLK
BF
PAL
GND
GND
DL CBL
-4.4V
SAFETY
DLBF
DLPAL
NC
NT SYNC
VF SYNC
MI SYNC
GND
NT Y OUT
MI Y OUT
B-Y OUT
VF Y OUT
A.GND
D.GND
SAFETY
DLCBLO
CF601
CF201
CF501
CF301
CF401
Y
B-Y
R-Y
NTSC-Y
MON
IC1
IC2
IC3
IC4
IC11
IC13
IC14
IC15
IC23
IC24
IC26
IC27
IC28
IC35
CT1 14MHz
CT2 14MHz PHASE-2
CT3 28MHz PHASE
VR1
VR2
VR3 CORNER GATE PULSE
VR4 CORNER PULSE
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP11
TP12
C SYNC
C BLK
BP
PP

OF DIGITAL PROCESS BOARD

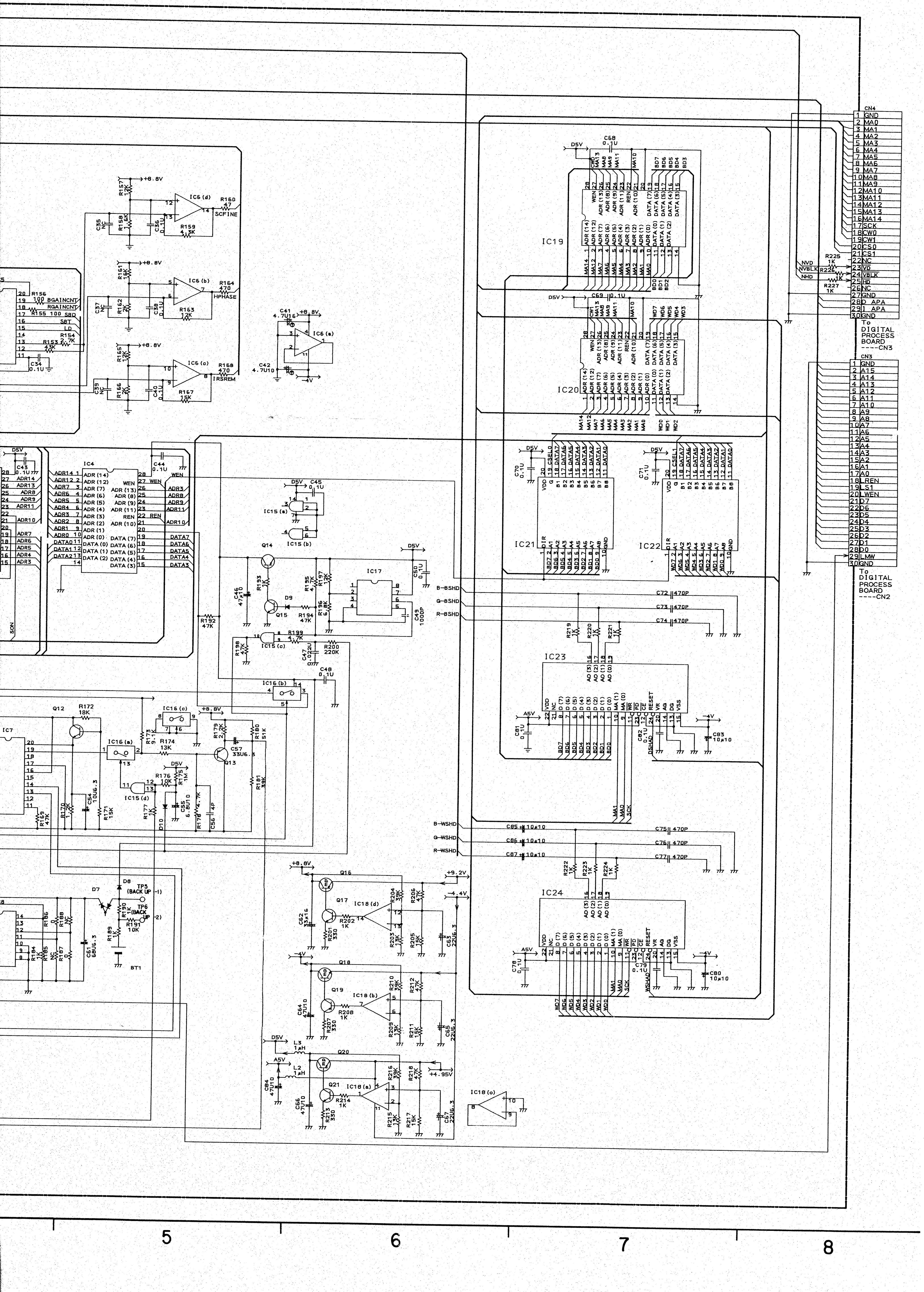


IC5
IC10
IC11
IC12
IC15
IC20
IC21
IC9 (c)
IC9 (d)
IC19 (b)
IC25 (b)
IC32
IC36
TP1 (FP)
TP3 (HD)
TP9 (4FSC)
TP10 (8FSC)
TP13 (GATE PULSE)
VR3 CORNER GATE PULSE
VR4 CORNER GATE PULSE
CN2
CN3
To SYSTEM CONTROL BOARD---CN3
To SYSTEM CONTROL BOARD---CN4
R405, 416-425 2K
R406-414 1K
R505-R525 NC
4
5
6
7

SCHEMATIC DIAGRAM OF SYST


SYSTEM CONTROL BOARD
A
B
C
D
E
F
1
2
3
4
CN1
+9.2V
RCB/RCU
HG CNT
R PED
G PED
B PED
RGAINCNT
BGAINCNT
IRIS REM
H PHASE
SC FINE
SCCRS1
SCCRS2
R-W SHD
G-W SHD
B-W SHD
R-B SHD
G-B SHD
B-B SHD
+4.95VD
-4.4V
AWC CNT
ALC P/A
GATE CNT
REC TRIG
GND
To MOTHER BOARD ----CN4
CN2
SEL 1
SEL 2
SEL 3
ADC 0
ADC 1
ADC 2
ADC 3
SHTR A
SHTR B
SHTR C
TXD
RXD
TRPE CTL
TAPE REW
CAM CHR
VD
V BLK
HD
NC
SHTR SW
HG IND
AUTO IND
BATT WAR
SHTR IND
TALLY
ENC/VF
+6dB CNT
CAM/BAR
IRIS A/R
1/20P
1/2CL
GAMMA
VCR CNT
RET CNT
To MOTHER BOARD ----CN6
TREW
CTL
RXDIN
TXDOUT
CDATA
RAMS
OE
CCLK
S2
S1
IC1
IC2
IC3
IC4
IC5
IC7
IC8
IC9
IC10
IC11
IC12
IC13
IC14
IC16 (d)
TP1 (RESET-1)
TP2 (GROUND)
TP3 (RESET-2)
TP4 (GROUND)
1/2CL
1/20P
BATT WAR
AUTO IND
SHTR IND
HG IND
GAMMA
TALLY
D APA
1 APA
A15
NVBLK
NHD
NVD
D5V
A5V
SW1 DATA INPUT SWITCH
CT1 CHARACTER POSITION
X1
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
SON
BUSY
SBT
STB
SBO

M OF SYSTEM CONTROL BOARD



IC4
IC6 (a)
IC6 (b)
IC6 (c)
IC6 (d)
IC7
IC15 (a)
IC15 (b)
IC15 (c)
IC15 (d)
IC16 (a)
IC16 (b)
IC16 (c)
IC17
IC18 (a)
IC18 (b)
IC18 (c)
IC18 (d)
IC19
IC20
IC21
IC22
IC23
IC24
Q12
Q13
Q14
Q15
Q16
Q17
Q18
Q19
Q20
Q21
D7
D8
D9
D10
BT1
TP5 (BACK UP -1)
TP6 (BACK UP -2)
SCFINE
HPHASE
IRSREM
BGAINCNT
RGAINCNT
SBD
SBT
LD
SON
WEN
REN
B-BSHD
G-BSHD
R-BSHD
B-WSHD
G-WSHD
R-WSHD
DSHAD
WSHAD
NVD
NVBLK
NHD
+8.8V
+9.2V
+4.95V
-4.4V
-4V
D5V
A5V
CN4
1 GND
2 MA0
3 MA1
4 MA2
5 MA3
6 MA4
7 MA5
8 MA6
9 MA7
10 MA8
11 MA9
12 MA10
13 MA11
14 MA12
15 MA13
16 MA14
17 SCK
18 CW0
19 CW1
20 CS0
21 CS1
22 NC
23 VD
24 VBLK
25 HD
26 NC
27 GND
28 D APA
29 I APA
30 GND
To DIGITAL PROCESS BOARD ----CN3
CN3
1 GND
2 A15
3 A14
4 A13
5 A12
6 A11
7 A10
8 A9
9 A8
10 A7
11 A6
12 A5
13 A4
14 A3
15 A2
16 A1
17 A0
18 LREN
19 LS1
20 LWEN
21 D7
22 D6
23 D5
24 D4
25 D3
26 D2
27 D1
28 D0
29 LMW
30 GND
To DIGITAL PROCESS BOARD ----CN2
5
6
7
8

<Index>

SYSTEM CONTROL BOARD

IC1	D3
IC2	B3
IC3	D4
IC4	D5
IC5	E4
IC6	D5, D6, E5
IC17	C6
IC19	E7
IC20	D7
IC21	C7
Q3	E3
Q4	E3
Q5	E3
Q6	E3
Q7	E2
Q8	C4
Q13	C5
Q14	C5
Q15	C5
D9	C6
D10	B5
IC7	C4
IC8	B4
IC9	A4
IC10	D2, E3
IC11	D1, D2
IC12	C2
IC13	B2, C2
IC14	C2, C3
IC15	B5, C5, C6, D5
IC16	B4, C5
IC18	A6, B6
IC22	C7
IC23	C7
IC24	B7
Q1	D1
Q2	D1
Q9	A2
Q10	A3
Q11	A3
Q12	C5
Q16	B6
Q17	B6
Q18	B6
Q19	B6
Q20	A6
Q21	A6
D1	D2
D2	C1
D3	A3
D4	A3
D5	A3
D6	A3
D7	B5
D8	B5

	IC6	IC8	IC9	IC10	IC11	IC12	IC13	IC14	IC15	IC16	IC18
Pin 1	0.0	2.0	0.7	4.7	4.7	4.7	4.7	1.0	0.0	2.4	0.7
2	0.0	0.0	1.3	4.9	1.0	4.7	4.7	1.0	0.0	2.4	1.2
3	0.0	4.3	1.1	4.7	0.0	4.7	0.0	1.0	0.0	3.4	1.2
4	8.9	1.4	0.0	0.0	0.0	4.7	4.6	-4.3	0.0	3.4	4.9
5	1.0	4.6	1.3	0.0	4.7	4.7	4.7	3.9	0.0	4.7	-1.1
6	1.0	2.0	4.4	4.3	1.0	4.7	0.1	3.9	0.0	0.1	-1.1
7	2.9	2.0	4.7	0.0	0.0	0.0	0.0	3.9	0.0	0.0	-0.6
8	1.8	0.0	1.4	0.0	3.9	4.7	4.7	4.9	4.4	0.0	0.0
9	1.3	0.0		4.2	4.7	4.9	0.4		4.3	0.0	0.0
10	1.3	0.0		0.5	4.7	4.7	4.4		4.7	1.6	0.0
11	-4.3	3.0		3.4	0.0	0.0	4.3		4.7	1.7	-4.4
12	1.1	0.0		3.4	4.7	4.7	4.7		4.3	4.7	2.2
13	1.1	-		4.7	1.0	0.0	0.5		4.2	4.7	2.3
14	1.8	0.0		4.7	4.7	4.7	4.7		4.7	4.7	0.5

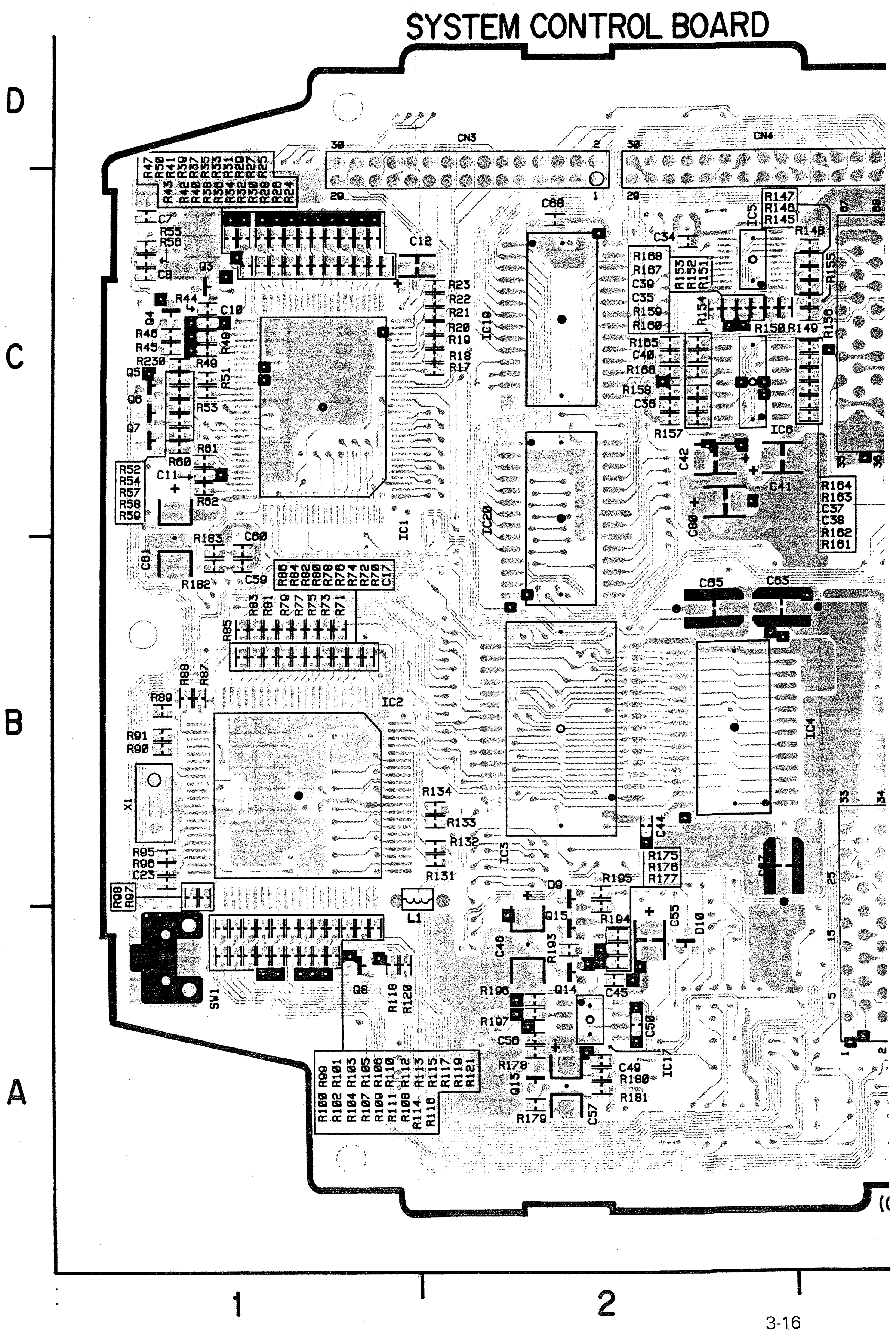
	IC3	IC4	IC5	IC7	IC19	IC20	IC21	IC22	IC24	IC25
Pin 1	2.4	2.3	0.0	0.0	1.6	1.6	4.7	4.7	4.0	0
2	2.5	4.1	2.2	4.7	2.2	2.2	4.7	0.8	4.0	0
3	3.1	2.3	2.2	0.0	1.5	1.5	0	-	4.0	0
4	3.0	4.1	2.2	4.7	1.6	1.6	0	4.0	4.0	0
5	3.3	3.1	0.0	4.7	1.9	1.9	0	4.0	4.0	0
6	3.2	3.3	4.9	1.2	1.8	1.8	0	4.0	4.0	0
7	2.9	3.2	0.9	2.4	1.9	1.9	0	4.0	4.0	0
8	2.3	3.0	0.0	2.3	1.9	1.9	0	4.0	0.7	4.7
9	2.9	2.9	0.6	2.3	2.0	2.0	0	4.0	1.9	1.9
10	3.1	3.1	4.9	0.0	1.9	1.8	0	0	2.0	2.0
11	2.6	2.5	4.9	4.5	0.0	4.0	3.5	3.5	1.9	1.9
12	2.5	2.5	0.0	4.7	0.0	4.0	2.9	3.0	0	0
13	2.6	2.6	0.6	4.4	0.0	4.0	3.5	3.5	0	0
14	0	0.0	0.7	4.3	0.0	0	3.5	3.5	0	0
15	1.8	1.9	0.0	0.0	0.0	4.0	3.5	3.5	-4.3	-4.3
16	2.4	2.4	4.6	4.7	0.0	4.0	4.7	4.7	0	0
17	2.8	2.7	4.7	0.0	0.0	4.0	2.4	2.4	0	0
18	2.4	2.5	2.7	0.0	0.0	4.0	2.4	2.4	0	0
19	2.2	2.2	2.4	2.4	4.7	0.7	4.7	4.7	0	0
20	0	3.0	0.0	2.4	0.0	0	4.7	4.7	2.5	2.5
21	2.9	2.9			2.2	2.2			-0.2	-
22	3.5	4.4			0.0	0			4.9	4.9
23	3.2	3.0			2.2	2.2			4.9	4.9
24	3.5	3.5			2.2	2.2			0	4.7
25	3.2	3.0			2.2	2.2				
26	2.1	2.2			1.8	1.8				
27	2.2	4.6			4.5	4.5				
28	4.7	4.7			4.7	4.7				

	IC1	IC2
Pin 1	3.1	0.9
2	2.8	0
3	4.7	0
4	3.3	2.3
5	3.3	0
6	3.0	0
7	3.1	4.2
8	3.0	2.4
9	3.5	2.4
10	2.8	4.2
11	3.0	2.3
12	2.5	4.2
13	2.2	2.3
14	2.1	4.2
15	4.7	2.9
16	0	2.3
17	2.4	0
18	3.6	3.0
19	0	0
20	4.4	4.7
21	2.1	1.0
22	4.5	4.4
23	4.5	4.5
24	4.5	3.6
25	4.5	1.3
26	4.5	3.6
27	4.7	3.6
28	4.7	0
29	4.5	3.5
30	4.5	4.7
31	4.5	2.2
32	0	0
33	1.2	0
34	4.6	0
35	4.3	0
36	4.0	4.7
37	4.3	0
38	0.3	4.4
39	4.3	4.6
40	0	4.3
41	4.1	0
42	4.1	0
43	3.9	0.1
44	4.3	0.1
45	4.3	0.1
46	3.9	0
47	4.3	0
48	4.3	0
49	4.2	4.6
50	4.2	4.7

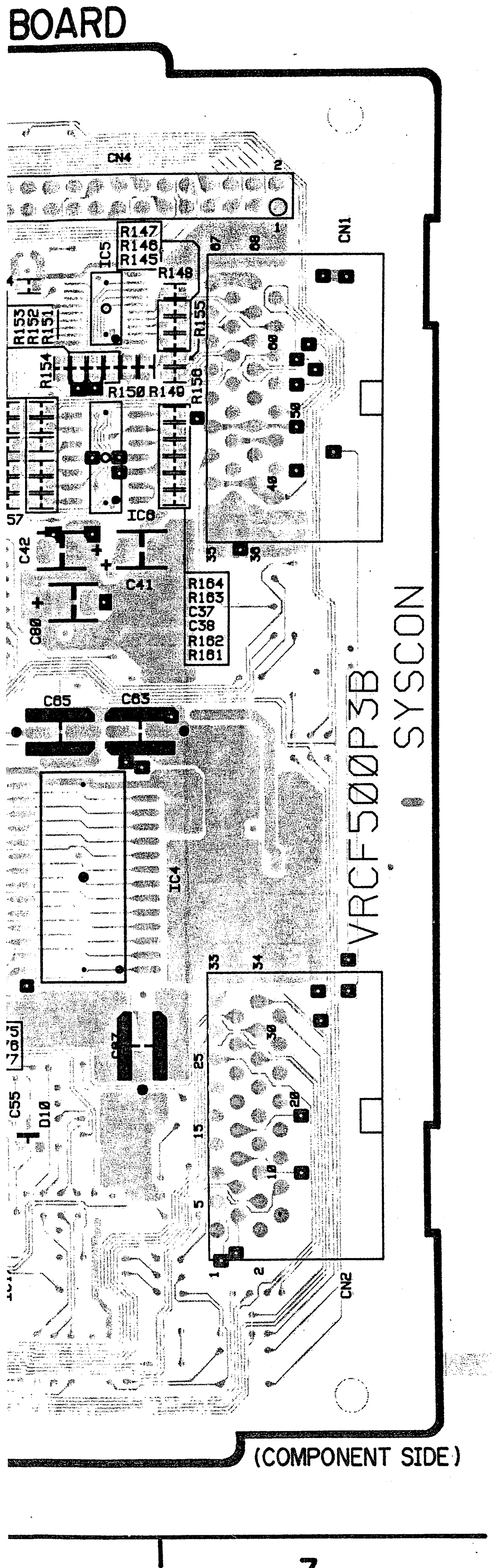
	IC1	IC2
Pin 51	4.2	4.6
52	0	4.7
53	4.7	4.7
54	0	0
55	4.4	4.7
56	4.4	4.7
57	0	4.3
58	0	0
59	4.3	4.7
60	4.7	0
61	4.7	4.7
62	4.7	0
63	4.7	4.7
64	4.7	0
65	0	2.2
66	4.7	2.5
67	4.7	2.7
68	4.7	2.4
69	4.5	1.9
70	4.5	2.6
71	4.5	2.5
72	4.5	2.5
73	0	4.7
74	0.3	4.9
75	0	3.9
76	0	1.0
77	0	1.0
78	1.7	1.0
79	4.7	3.9
80	0	3.5
81	1.9	0.8
82	4.4	2.0
83	-	0.9
84	-	1.0
85	3.0	
8.6	4.7	
87	4.7	
88	0	
89	0	
90	2.6	
91	0	
92	2.5	
93	2.6	
94	1.8	
95	2.4	
96	2.8	
97	2.4	
98	2.2	
99	3.2	
100	2.9	

	B	C	E
Q1	0.0	2.0	0.0
2	0.0	2.0	0.0
3	0.0	4.9	0.0
4	4.7	0.4	4.7
5	0.0	9.2	0.0
6	0.0	8.8	0.0
7	0.0	4.9	0.0
8	0.0	4.9	0.0
9	4.0	4.7	4.7
10	0.7	0.1	0.0
11	0.0	4.7	0.0
12	3.0	4.7	2.4
13	0.5	0.0	1.2
14	4.0	4.7	0.0
15	1.2	0.7	-
16	8.6	8.9	9.2
17	0.6	8.6	0.0
18	-3.7	-4.3	-4.4
19	-0.6	-3.7	0.0
20	4.2	4.8	4.9
21	0.7	4.2	0.1

COMPONENT SIDE



CONDUCTOR VIEW OF SYSTEM CONTROL BOARD

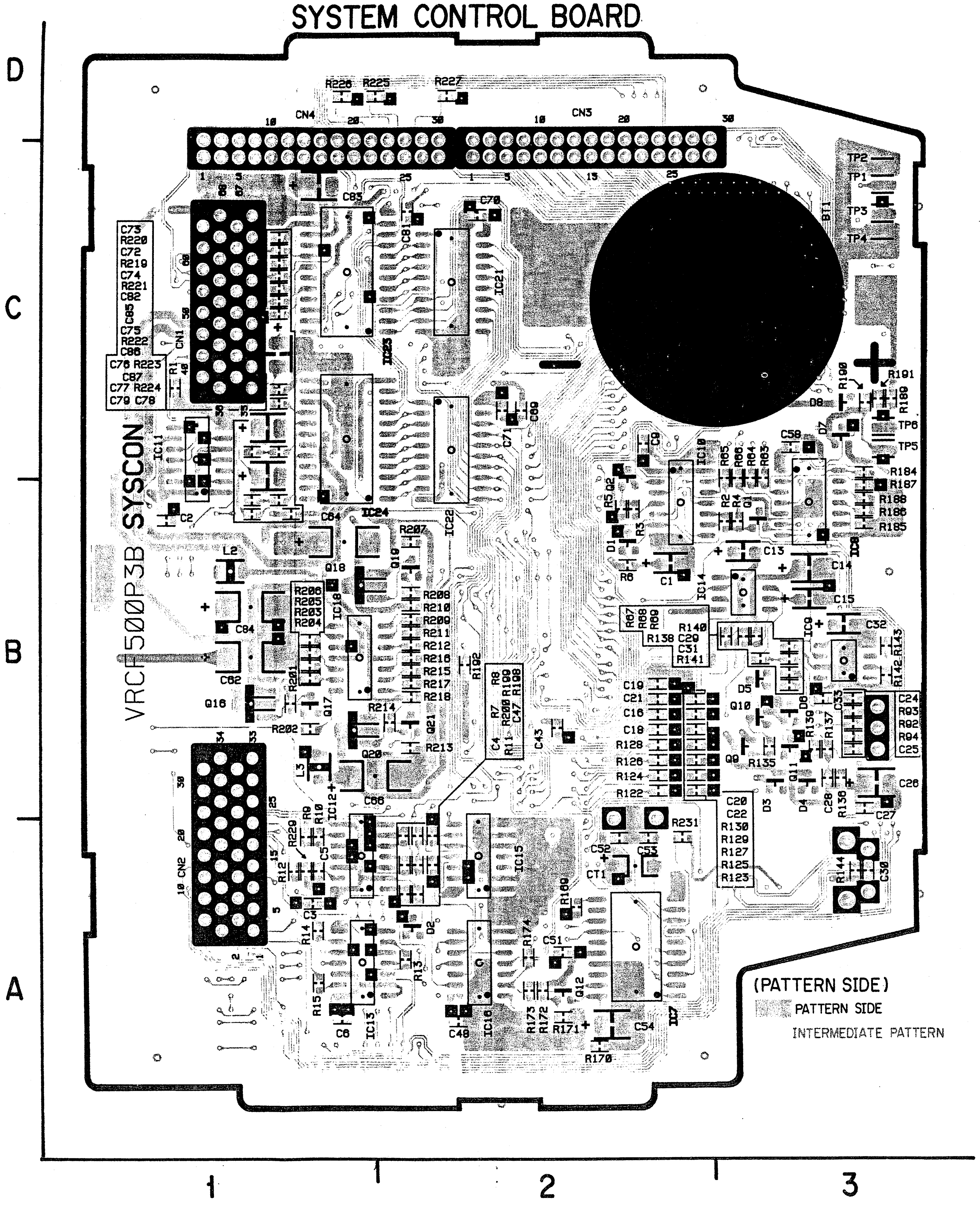

BOARD
CN4
CN1
IC5
IC8
IC4
C42
C41
C80
C65
C63
C55
D10
CN2
R147
R146
R145
R148
R153
R152
R151
R154
R155
R150
R149
R156
R164
R163
C37
C38
R162
R161
VRCF500P3B
SYSCON
(COMPONENT SIDE)
3

<Index>
SYSTEM CONTROL BOARD
COMPONENT SIDE

IC1	C1
IC2	B1
IC3	B2
IC4	B3
IC5	C2
IC6	C2
IC17	A2
IC19	C2
IC20	C2
IC21	C2
Q3	C1
Q4	C1
Q5	C1
Q6	C1
Q7	C1
Q8	A1
Q13	C2
Q14	C2
Q15	C2
D9	B2
D10	A2

COMPONENT SIDE
INTERMEDIATE PATTERN

PATTERN SIDE


SYSTEM CONTROL BOARD
D
C
B
A
1
2
3
CN4
CN3
CN1
CN2
TP1
TP2
TP3
TP4
TP5
TP6
BT1
IC7
IC8
IC10
IC11
IC12
IC13
IC14
IC15
IC16
IC18
IC21
IC22
IC23
IC24
CT1
L2
L3
VRCF500P3B
SYSCON

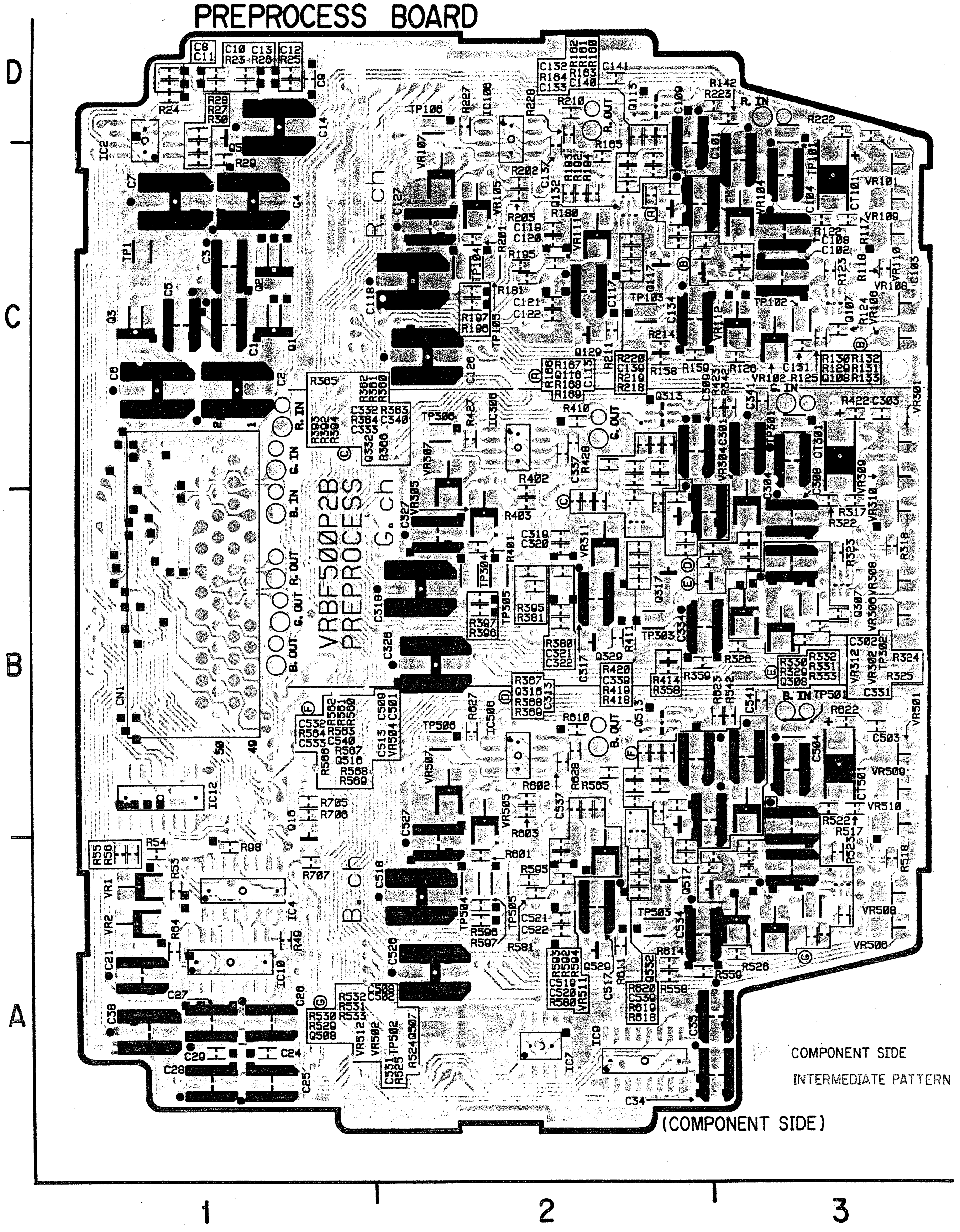
(PATTERN SIDE)
PATTERN SIDE
INTERMEDIATE PATTERN

<Index>
SYSTEM CONTROL BOARD
PATTERN SIDE

IC7	A2
IC8	B3
IC9	B3
IC10	C2
IC11	C1
IC12	B1
IC13	A1
IC14	B2
IC15	A2
IC16	A2
IC18	B1
IC22	B2
IC23	C2
IC24	B1
Q1	B3
Q2	B2
Q9	B3
Q10	B3
Q11	B3
Q12	A2
Q16	B1
Q17	B1
Q18	B1
Q19	B2
Q20	B1
Q21	B2
D1	B2
D2	A2
D3	B3
D4	B3
D5	B3
D6	B3
D7	C3
D8	C3

CONDUCTOR VIEW OF PREPROCESS BOARD

COMPONENT SIDE


PREPROCESS BOARD
D
C
B
A
1
2
3
VRBF500P2B
PREPROCESS
R.ch
G.ch
B.ch
R.IN
G.IN
B.IN
R.OUT
G.OUT
B.OUT
CN1
IC2
IC4
IC7
IC9
IC10
IC12
IC106
IC306
IC506
VR1
VR2
TP1
COMPONENT SIDE
INTERMEDIATE PATTERN
(COMPONENT SIDE)

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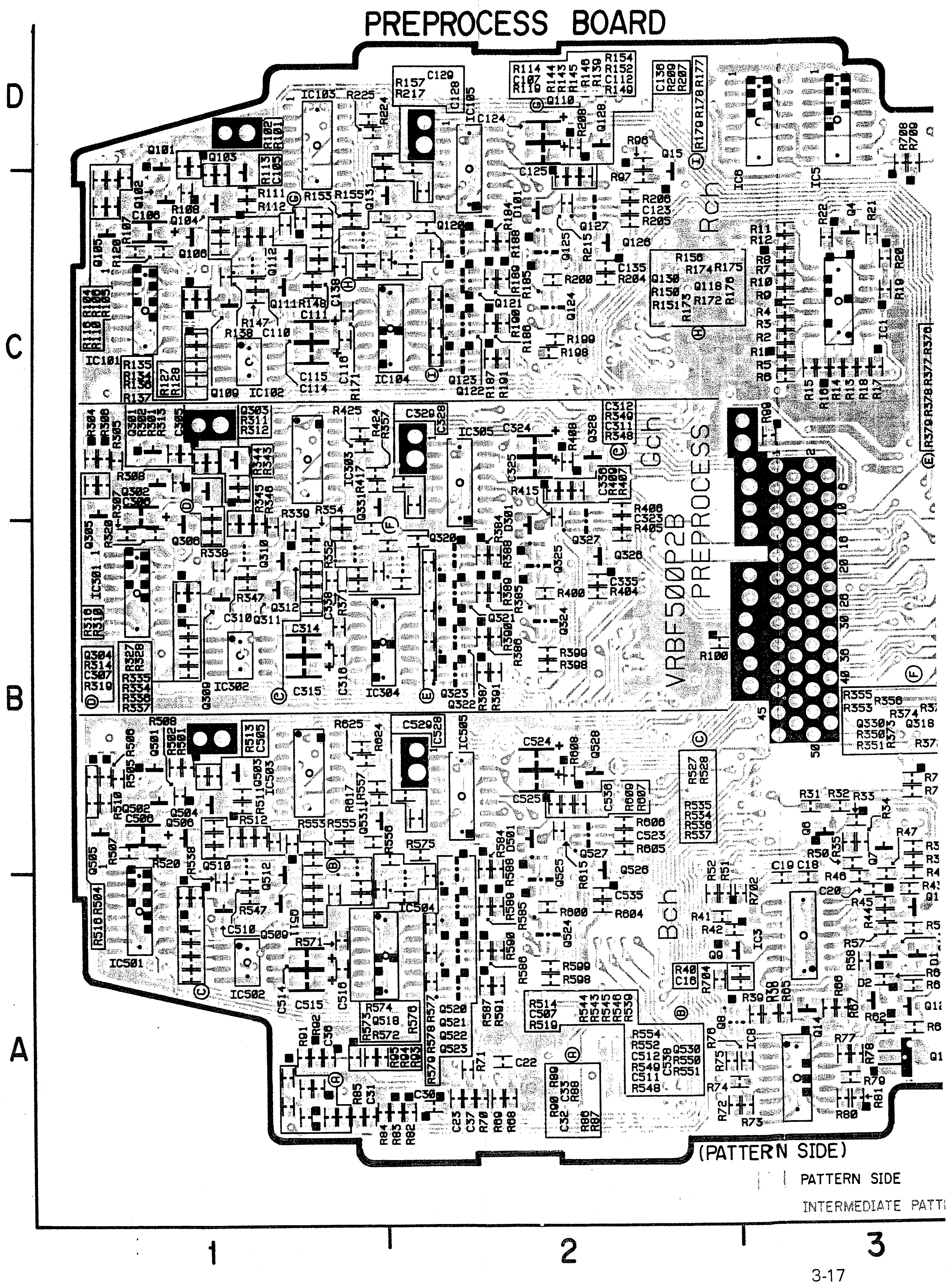
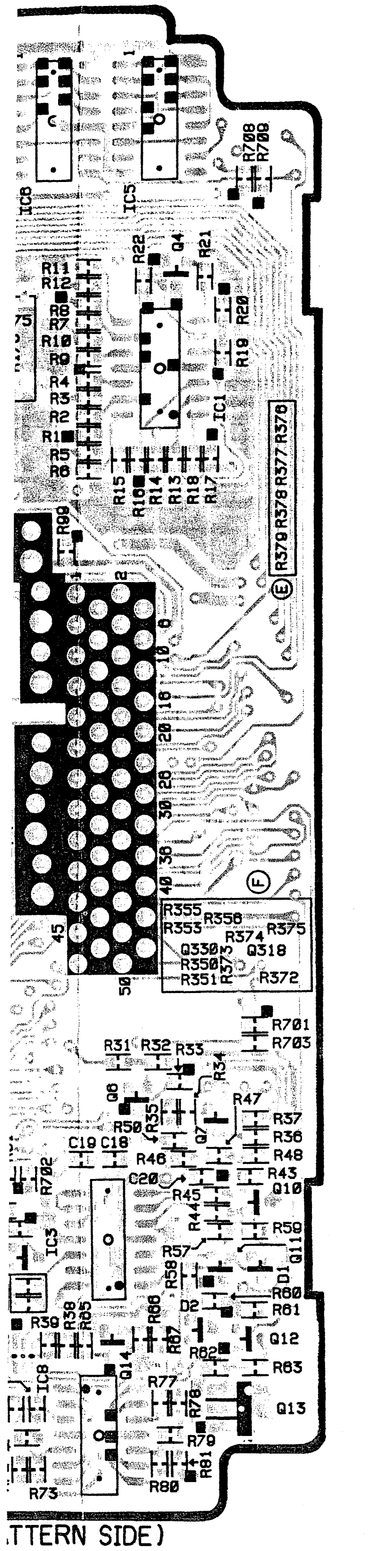
PREPROCESS BOARD

COMPONENT SIDE

IC2	C1
IC4	A1
IC7	A2
IC9	A2
IC10	A1
IC12	B1
IC106	D2
IC306	C2
IC506	B2
Q1	C1
Q2	C1
Q3	C1
Q5	C1
Q16	B1
Q107	C3
Q113	D2
Q116	C2
Q117	C2
Q129	C2
Q132	C2
Q307	B3
Q313	C2
Q316	B2
Q317	B2
Q329	B2
Q332	C1
Q507	A2
Q513	B2
Q516	B1
Q517	A2
Q529	A2
Q532	A2

PATTERN SIDE


PREPROCESS BOARD
D
C
B
A
1
2
3
VRBF500P2B
PREPROCESS
Rch
Gch
Bch
IC101
IC102
IC103
IC104
IC105
IC302
IC304
IC305
IC501
IC502
IC503
IC504
IC505
IC1
IC3
IC5
IC6
(PATTERN SIDE)
PATTERN SIDE
INTERMEDIATE PATT



TTERN SIDE)

PATTERN SIDE

INTERMEDIATE PATTERN

3

<Index>

PREPROCESS BOARD
PATTERN SIDE

IC1	C3
IC3	A3
IC5	C3
IC6	C3
IC8	C3
IC101	C1
IC102	C1
IC103	D1
IC104	C1
IC105	D2
IC301	B1
IC302	B1
IC303	C1
IC304	B1
IC305	C2
IC501	A1
IC502	A1
IC503	B1
IC504	A2
IC505	B2
Q4	C3
Q6	B3
Q7	B3
Q8	A2
Q9	A2
Q10	A3
Q11	A3
Q12	A3
Q13	A3
Q14	A3
Q101	D1
Q102	C1
Q104	C1
Q105	C1
Q106	C1
Q110	D2
Q111	C1
Q112	C1
Q118	C2
Q120	C2
Q121	C2
Q122	C2
Q123	C2
Q124	C2
Q125	C2
Q126	C2
Q127	C2
Q128	D2
Q130	C2
Q131	C1
Q301	C1
Q302	C1
Q304	B1
Q305	B1
Q306	B1
Q310	B1
Q311	B1
Q312	B1
Q318	B3
Q320	B2
Q321	B2
Q322	B2
Q323	B2
Q324	B2
Q325	B2
Q326	B2
Q327	B2
Q328	C2
Q330	B3
Q331	C1
Q501	B1
Q502	B1
Q504	B1
Q505	B1
Q506	B1
Q510	B1
Q511	A1
Q512	A1
Q518	A1
Q520	A2
Q521	A2
Q522	A2
Q523	A2
Q524	A2
Q525	A2
Q526	A2
Q527	B2
Q528	B2
Q530	A2
Q531	B1
D1	A3
D2	A3
D101	C2
D301	B2
D501	B2

	IC1	IC2	IC3	IC4	IC5	IC6	IC7	IC8	IC9	IC10	IC12	IC101	IC102	IC103	IC104	IC105	IC108
Pin 1	4.2	3.2	6.2	-	0.0	0.0	-3.4	1.1	6.7	6.2	0.6	0.7	2.7	0.5	0.5	0.7	0.0
2	2.5	2.5	1.4	4.7	3.4	3.4	2.7	1.1	0.0	1.9	0.5	0.6	2.7	4.9	0.5	0.5	0.0
3	2.5	2.5	1.4	0.0	4.7	4.7	0.0	1.1	2.4	2.0	4.7	0.6	2.7	3.8	0.5	0.0	0.0
4	7.0	-4.0	11.8	0.0	1.2	0.0	-4.0	6.7	0.1	0.0	1.1	0.5	-4.0	4.5	0.5	0.0	-4.0
5	0.5	4.7	0.6	1.4	4.7	1.0	0.0	2.1	0.1	0.0	1.1	0.5	0.5	-4.0	0.4	0.0	0.5
6	0.5	2.1	0.6	0.0	1.1	1.0	1.9	2.1	0.1	0.0	0.0	0.0	0.5	5.0	0.0	0.0	0.5
7	-0.3	5.4	0.8	-4.0	3.4	3.9	-3.5	2.1	1.6	0.0	-4.0	-4.0	1.4	3.8	-4.0	-4.0	0.3
8	-3.7	6.7	0.0	0.0	0.0	0.0	6.7	0.6	0.0	0.0	0.0	0.0	6.7	4.5	0.0	0.0	6.7
9	-2.2		0.0	4.9	1.7	3.8		0.6	2.6	0.0	0.2	1.3		5.0	0.2	0.0	
10	-2.2		0.0	1.0	1.6	1.0		0.6	1.3	0.0	0.0	0.0		4.0	1.3	0.2	
11	-4.4		-4.0	0.0	1.1	1.0		-4.0	2.6	0.0	0.0	1.3		4.7	0.0	0.0	
12	3.5		0.8	0.9	0.0	0.0		0.8	0.5	0.0	1.2	0.5		4.7	0.0	-2.1	
13	3.5		0.8	0.8	4.7	1.6		0.8	-	0.0	3.8	0.5		4.0	0.0	-2.2	
14	6.1		0.8	0.9	2.8	3.7		0.8	2.1	0.0	1.2	0.5		4.9	0.0	-2.1	
15				4.7	0.0	0.0			0.0	1.9	0.5	0.6		-	0.5	0.5	
16				4.7	4.7	4.7			-	11.9	4.7	6.7		-	6.7	6.7	

	IC201	IC202	IC203	IC204	IC205	IC208	IC301	IC302	IC303	IC304	IC305	IC308
Pin 1	0.7	2.7	0.5	0.5	0.7	0.0	0.7	2.7	0.5	0.5	0.7	0.0
2	0.6	2.7	4.9	0.5	0.5	0.0	0.6	2.7	4.9	0.5	0.5	0.0
3	0.6	2.7	3.8	0.5	0.0	0.0	0.6	2.7	3.8	0.5	0.0	0.0
4	0.5	-4.0	4.5	0.5	0.0	-4.0	0.5	-4.0	4.5	0.5	0.0	-4.0
5	0.5	0.5	-4.0	0.4	0.0	0.5	0.5	0.5	-4.0	0.4	0.0	0.5
6	0.0	0.5	5.0	0.0	0.0	0.5	0.0	0.5	5.0	0.0	0.0	0.5
7	-4.0	1.4	3.8	-4.0	-4.0	0.3	-4.0	1.4	3.8	-4.0	-4.0	0.3
8	0.0	6.7	4.5	0.0	0.0	6.7	0.0	6.7	4.5	0.0	0.0	6.7
9	1.3		5.0	0.2	0.0		1.3		5.0	0.2	0.0	
10	0.0		4.0	1.3	0.2		0.0		4.0	1.3	0.2	
11	1.3		4.7	0.0	0.0		1.3		4.7	0.0	0.0	
12	0.5		4.7	0.0	-2.1		0.5		4.7	0.0	-2.1	
13	0.5		4.0	0.0	-2.2		0.5		4.0	0.0	-2.2	
14	0.5		4.9	0.0	-2.1		0.5		4.9	0.0	-2.1	
15	0.6		-	0.5	0.5		0.6		-	0.5	0.5	
16	6.7		-	6.7	6.7		6.7		-	6.7	6.7	

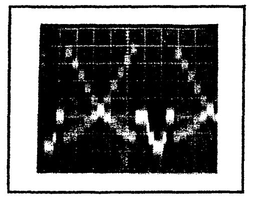
	B	C	E
Q1	6.2	6.7	7.0
2	-3.7	-4.0	-4.4
3	4.3	4.7	4.9
4	-0.2	0.0	0.5
5	4.0	2.5	4.7
6	-0.1	0.0	0.6
7	0.5	-0.3	0.5
9	0.5	-0.9	0.8
10	1.2	6.7	0.6
11	3.2	6.7	6.2
12	0.7	0.1	0.0
13	11.2	11.8	11.9
14	0.6	0.0	0.0
16	0.6	0.0	0.0
101	0.5	6.7	-0.2
102	0.5	2.1	-0.2
104	2.1	6.7	1.3
105	0.5	6.7	-0.1
106	0.4	0.5	0.5
111	-3.5	-0.1	-0.2
112	-3.5	-0.1	-0.2
116	0.5	1.2	0.5
117	1.3	6.7	0.5
126	-2.1	5.4	-2.9
128	1.4	6.7	0.7
129	0.5	6.7	0.0
131	-3.5	-4.0	-3.0

	B	C	E
Q201	0.5	6.7	-0.2
202	0.5	2.1	-0.2
204	2.1	6.7	1.3
205	0.5	6.7	-0.1
206	0.4	0.5	0.5
211	-3.5	-0.1	-0.2
212	-3.5	-0.1	-0.2
216	0.5	1.2	0.5
217	1.3	6.7	0.5
226	-2.1	5.4	-2.9
228	1.4	6.7	0.7
229	0.5	6.7	0.0
231	-3.5	-4.0	-3.0
301	0.5	6.7	-0.2
302	0.5	2.1	-0.2
304	2.1	6.7	1.3
305	0.5	6.7	-0.1
306	0.4	0.5	0.5
311	-3.5	-0.1	-0.2
312	-3.5	-0.1	-0.2
316	0.5	1.2	0.5
317	1.3	6.7	0.5
326	-2.1	5.4	-2.9
328	1.4	6.7	0.7
329	0.5	6.7	0.0
331	-3.5	-4.0	-3.0

	Q8
1	6.7
2	0.5
3	1.2
4	0.0
5	1.2
6	0.8

	1	2	3	4	5	6
Q107	6.7	0.5	1.1	0.0	1.1	0.5
110	3.8	0.5	3.8	0.5	-0.1	-0.2
113	1.3	5.0	0.0	4.9	5.7	5.7
118	6.7	0.5	1.1	0.0	1.1	0.5
120	0.0	0.5	0.0	2.1	1.2	1.2
121	0.0	0.5	0.0	1.2	1.2	1.2
122	0.0	0.5	0.0	0.8	1.0	1.2
123	0.0	0.5	0.0	0.6	1.2	1.2
124	-2.9	0.5	-2.9	0.5	1.2	1.2
125	-4.0	-2.9	-4.0	-2.9	-2.2	-2.1
127	5.4	5.4	1.4	5.4	6.1	6.1
130	-0.1	-2.9	-0.2	-2.9	-3.6	-3.6
132	6.7	4.0	1.3	0.0	4.6	4.0
207	6.7	0.5	1.1	0.0	1.1	0.5
210	3.8	0.5	3.8	0.5	-0.1	-0.2
213	1.3	5.0	0.0	4.9	5.7	5.7
218	6.7	0.5	1.1	0.0	1.1	0.5
220	0.0	0.5	0.0	2.1	1.2	1.2
221	0.0	0.5	0.0	1.2	1.2	1.2
222	0.0	0.5	0.0	0.8	1.0	1.2
223	0.0	0.5	0.0	0.6	1.2	1.2
224	-2.9	0.5	-2.9	0.5	1.2	1.2
225	-4.0	-2.9	-4.0	-2.9	-2.2	-2.1
227	5.4	5.4	1.4	5.4	6.1	6.1
230	-0.1	-2.9	-0.2	-2.9	-3.6	-3.6
232	6.7	4.0	1.3	0.0	4.6	4.0
307	6.7	0.5	1.1	0.0	1.1	0.5
310	3.8	0.5	3.8	0.5	-0.1	-0.2
313	1.3	5.0	0.0	4.9	5.7	5.7
318	6.7	0.5	1.1	0.0	1.1	0.5
320	0.0	0.5	0.0	2.1	1.2	1.2
321	0.0	0.5	0.0	1.2	1.2	1.2
322	0.0	0.5	0.0	0.8	1.0	1.2
323	0.0	0.5	0.0	0.6	1.2	1.2
324	-2.9	0.5	-2.9	0.5	1.2	1.2
325	-4.0	-2.9	-4.0	-2.9	-2.2	-2.1
327	5.4	5.4	1.4	5.4	6.1	6.1
330	-0.1	-2.9	-0.2	-2.9	-3.6	-3.6
332	6.7	4.0	1.3	0.0	4.6	4.0

1. 10 µsec/DIV 0.1V/DIV



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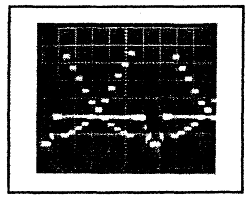

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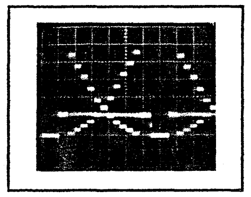

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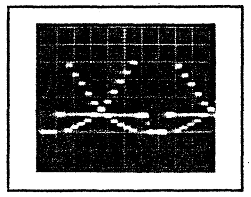

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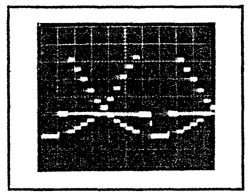

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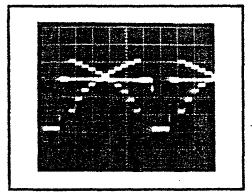
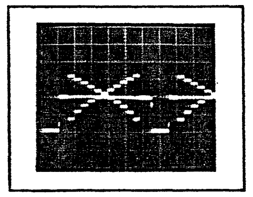
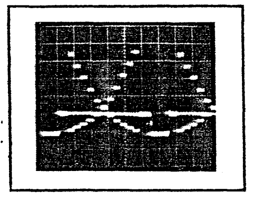


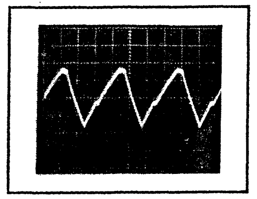
7. 10 µsec/DIV 0.5V/DIV



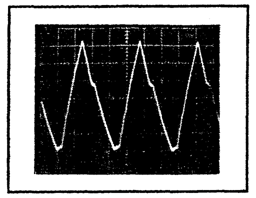
8. 10 µsec/DIV 0.2V/DIV



9. 5 msec/DIV 50mV/DIV



10. 5 msec/DIV 0.2V/DIV



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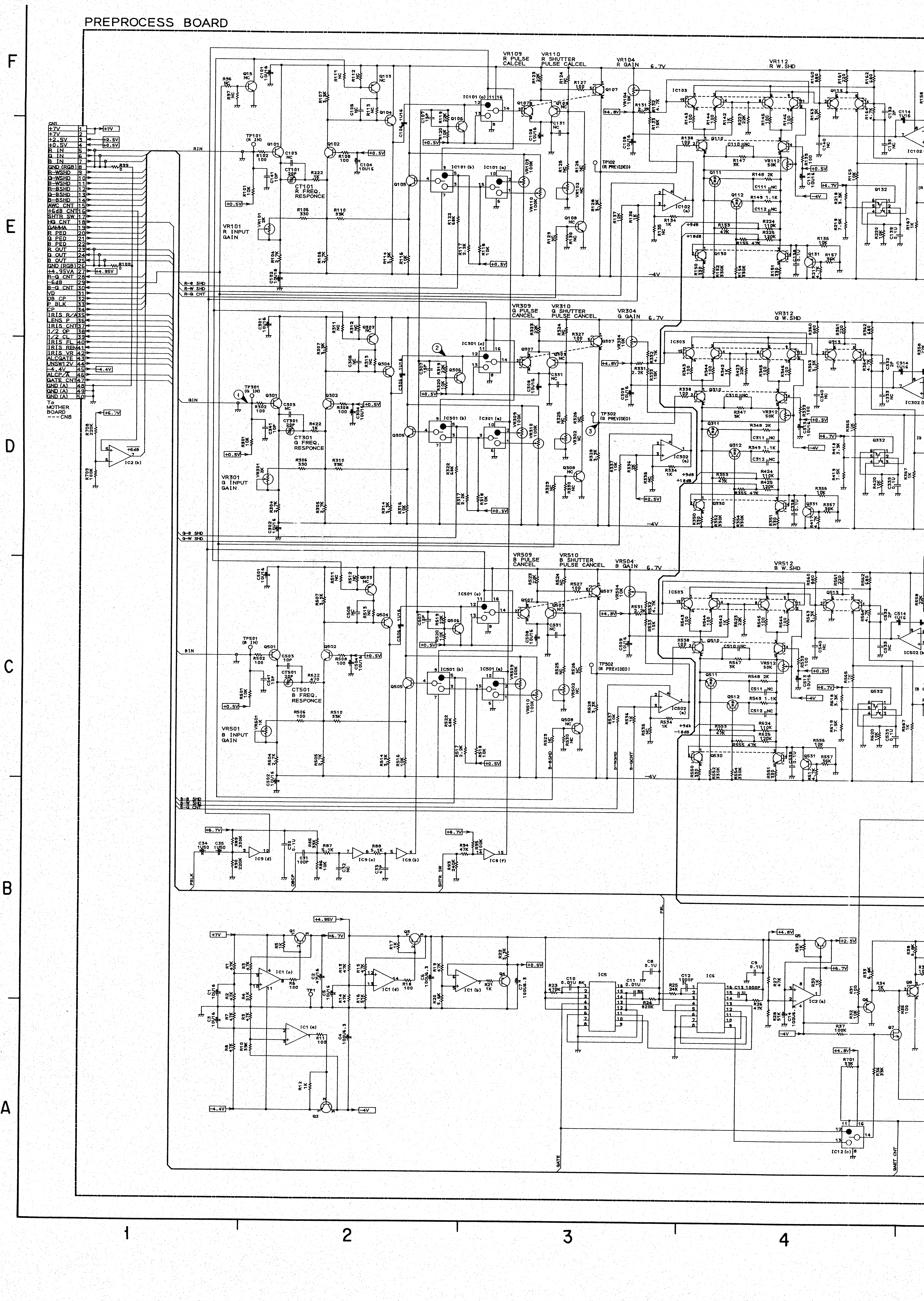
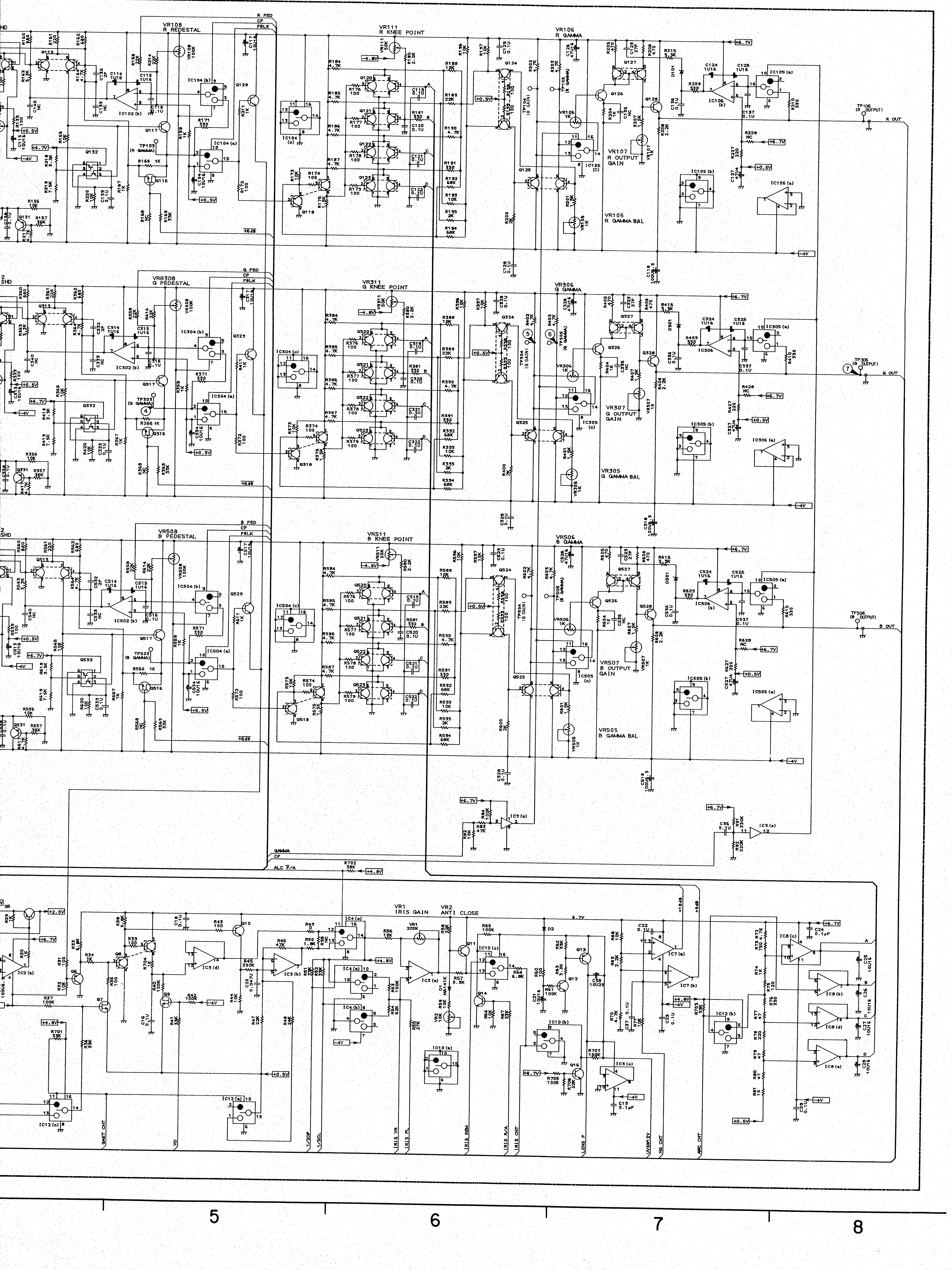
PREPROCESS BOARD

IC2	B4, D1
IC4	A6, B6
IC7	B7
IC9	B2, B3, B6, B7
IC10	A6, A7, B6
IC12	A4, A5, A7
IC106	E7
IC306	D7
IC506	C7
Q1	B2
Q2	A2
Q3	B2
Q5	B4
Q16	A7
Q107	F3
Q113	F4
Q116	E5
Q117	E5
Q129	E5
Q132	E4
Q307	D3
Q313	D4
Q316	D5
Q317	D5
Q329	D5
Q332	D4
Q507	C3
Q513	C4
Q516	C5
Q517	C5
Q529	C5
Q532	C4
IC1	A2, B2, B3
IC3	A7, B5, B7
IC5	B3
IC6	B4
IC8	A8, B8
IC101	E2, E3, F3
IC102	E4, E5
IC103	F3
IC104	E5, F5
IC105	E7, F7
IC301	D2, D3
IC302	D4, D5
IC303	D3
IC304	D5
IC305	D7
IC501	C2, C3
IC502	C4, C5
IC503	C3
IC504	C5
IC505	C7
Q4	B3
Q6	B4
Q7	A4
Q8	B5
Q9	A5
Q10	B5
Q11	B6
Q12	B7
Q13	B7
Q14	A6
Q101	E2
Q102	E2
Q104	F2
Q105	E2
Q106	E2
Q110	E4
Q111	E4
Q112	E4
Q118	E5
Q120	F6
Q121	E6
Q122	E6
Q123	E6
Q124	F6
Q125	E6
Q126	E7
Q127	F7
Q128	E7
Q130	E4
Q131	E4
Q301	D2
Q302	D2
Q304	D2
Q305	D2
Q306	D2
Q310	D4
Q311	D4
Q312	D4
Q318	D5
Q320	D6
Q321	D6
Q322	D6
Q323	D6
Q324	D6
Q325	D6
Q326	D7
Q327	D7
Q328	D7
Q330	D4
Q331	D4
Q501	C2
Q502	C2
Q504	C2
Q505	C2
Q506	C2
Q510	C4
Q511	C4
Q512	C4
Q518	C5
Q520	C6
Q521	C6
Q522	C6
Q523	C6
Q524	C6
Q525	C6
Q526	C7
Q527	C7
Q528	C7
Q530	C4
Q531	C4
D1	A6
D2	B7
D101	F7
D301	D7
D501	C7

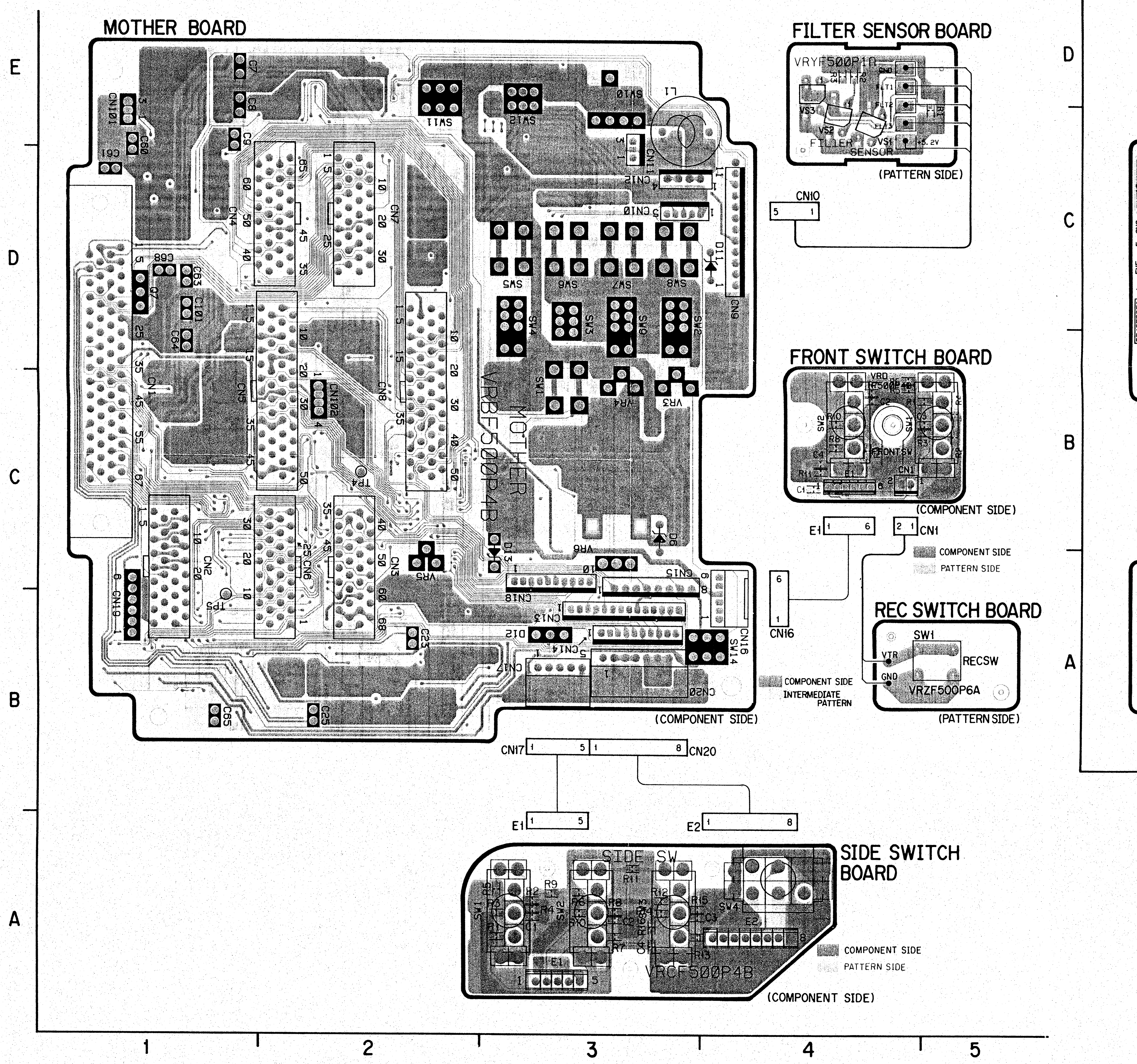
SCHEMATIC DIAGRAM OF PRE


PREPROCESS BOARD
A
B
C
D
E
F
1
2
3
4
CN1
+7V 1
+7V 2
+2.5V 3
+0.5V 4
R IN 5
G IN 6
B IN 7
GND (RGB) 8
R-WSHD 9
G-WSHD 10
B-WSHD 11
R-BSHD 12
G-BSHD 13
B-BSHD 14
AWC CNT 15
+6dB CNT 16
SHTR SW 17
HG CNT 18
GAMMA 19
R PED 20
G PED 21
B PED 22
R OUT 23
G OUT 24
B OUT 25
GND (RGB) 26
+4.95VA 27
R-G CNT 28
-6dB 29
B-G CNT 30
VD 31
OB CP 32
P BLK 33
CP 34
IRIS R/A 35
LENS P 36
IRIS CNT 37
1/2 OP 38
1/2 CL 39
IRIS FL 40
IRIS REM 41
IRIS VR 42
ALCGATE 43
UNSW12V 44
-4.4V 45
ALCP/A 46
GATE CNT 47
GND (A) 48
GND (A) 49
GND (A) 50
To MOTHER BOARD ---CN8
IC2 (b)
VR101 R INPUT GAIN
CT101 R FREQ. RESPONCE
TP101 (R IN)
VR109 R PULSE CALCEL
VR110 R SHUTTER PULSE CALCEL
VR104 R GAIN
VR112 R W.SHD
TP102 (R PREVIDEO)
IC101 (a)
IC101 (b)
IC101 (c)
IC102 (a)
IC103
VR301 G INPUT GAIN
CT301 G FREQ. RESPONCE
TP301 (G IN)
VR309 G PULSE CANCEL
VR310 G SHUTTER PULSE CANCEL
VR304 G GAIN
VR312 G W.SHD
TP302 (G PREVIDEO)
IC301 (a)
IC301 (b)
IC301 (c)
IC302 (a)
IC303
VR501 B INPUT GAIN
CT501 B FREQ. RESPONCE
TP501 (B IN)
VR509 B PULSE CANCEL
VR510 B SHUTTER PULSE CANCEL
VR504 B GAIN
VR512 B W.SHD
TP502 (B PREVIDEO)
IC501 (a)
IC501 (b)
IC501 (c)
IC502 (a)
IC503
R IN
G IN
B IN
R-B SHD
R-W SHD
R-G CNT
G-B SHD
G-W SHD
B-B SHD
B-W SHD
B-G CNT
P BLK
OBCP
SHTR SW
IC9 (a)
IC9 (b)
IC9 (c)
IC9 (d)
IC9 (f)
IC1 (a)
IC1 (b)
IC1 (c)
IC1 (d)
IC1 (e)
IC2 (a)
IC5
IC6
IC12 (c)
GATE
GAET CNT
PBL
6.7V
-4V
+7V
+6.7V
+4.95V
+4.8V
+2.5V
+0.5V
-4.4V
+6dB
+9dB
+18dB

RAM OF PRE PROCESS BOARD


VR108
R REDESTAL
R PED
CP
PBLK
VR111
R KNEE POINT
VR106
R GAMMA
TP106
(R OUTPUT)
R OUT
VR107
R OUTPUT
GAIN
VR105
R GAMMA BAL
TP103
(R GAMMA)
TP104
(R GAIN)
VRR308
G PEDESTAL
G PED
VR311
G KNEE POINT
VR306
G GAMMA
TP306
(G OUTPUT)
G OUT
VR307
G OUTPUT
GAIN
VR305
G GAMMA BAL
TP303
(G GAMMA)
TP304
(G GAIN)
TP305
(G GAMMA)
VR508
B PEDESTAL
B PED
VR511
B KNEE POINT
VR506
B GAMMA
TP506
(B OUTPUT)
B OUT
VR507
B OUTPUT
GAIN
VR505
B GAMMA BAL
TP503
(B GAMMA)
TP504
(B GAIN)
TP505
(B GAMMA)
GAMMA
CP
ALC F/A
VR1
IRIS GAIN
VR2
ANTI CLOSE
GAET CNT
VD
1/2OP
1/2CL
IRIS VR
IRIS FL
IRIS REM
IRIS R/A
IRIS CNT
LENS P
UVSW12V
HQ CNT
AWC CNT
+18dB
+9dB
+6dB
+6.7V
+0.5V
-4V
+4.8V
-4.8V
+2.5V
5
6
7
8

CONDUCTOR VIEW OF MO

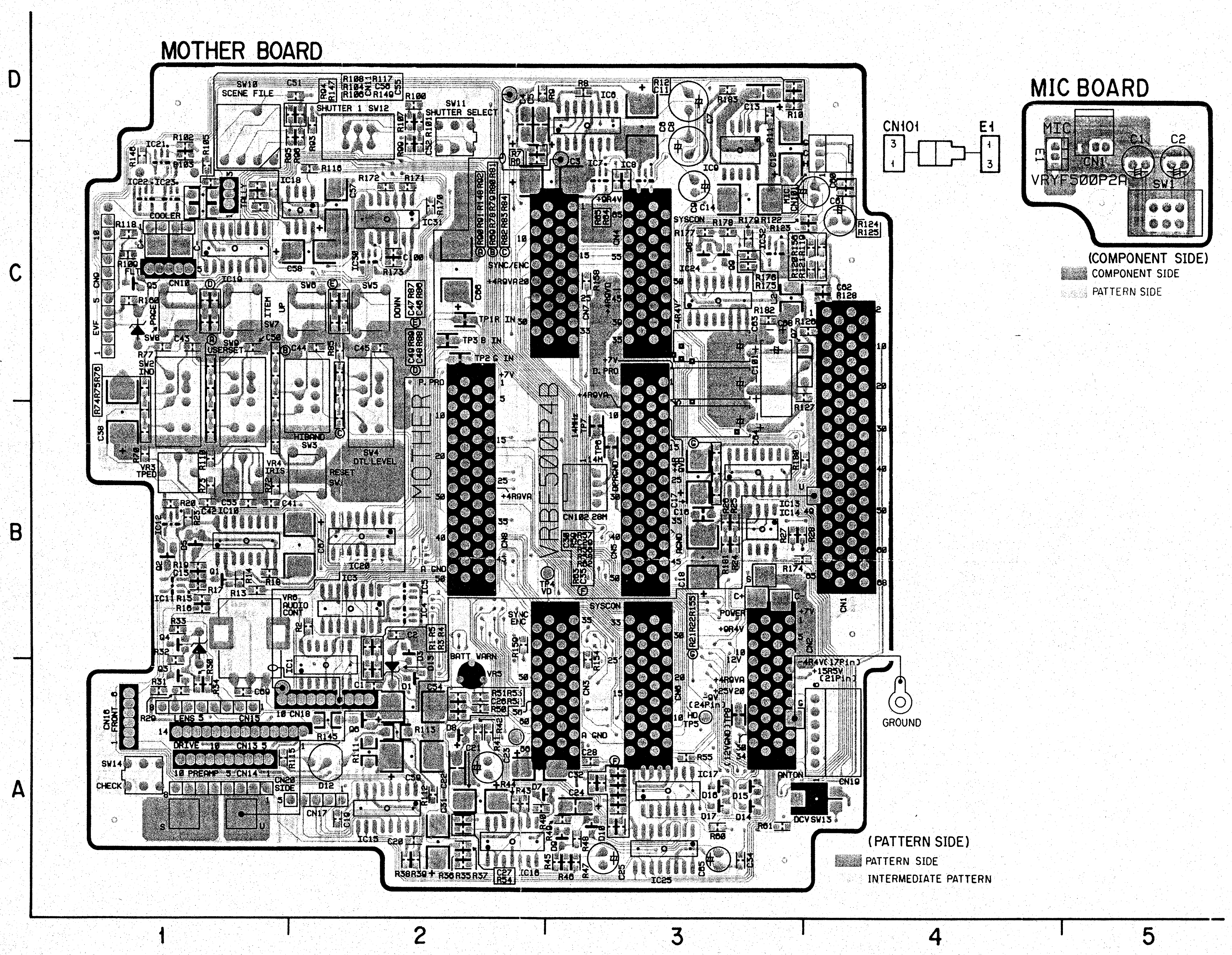

MOTHER BOARD
VRBF500P4B
MOTHER
(COMPONENT SIDE)
COMPONENT SIDE
INTERMEDIATE PATTERN
FILTER SENSOR BOARD
VRYF500P1A
(PATTERN SIDE)
CN10
FRONT SWITCH BOARD
(COMPONENT SIDE)
E1
CN1
COMPONENT SIDE
PATTERN SIDE
CN16
REC SWITCH BOARD
VTR
GND
SW1
RECSW
VRZF500P6A
(PATTERN SIDE)
CN17
CN20
E1
E2
SIDE SWITCH BOARD
SIDE SW
VRCF500P4B
COMPONENT SIDE
PATTERN SIDE
(COMPONENT SIDE)
A
B
C
D
E
1
2
3
4
5

<Index>
MOTHER BOARD
COMPONENT SIDE

D6	C3
D11	D4

<Index>
MOTHER BOARD
PATTERN SIDE

IC1	A2
IC3	B2
IC4	B2
IC5	B2
IC6	D3
IC7	C3
IC8	C3
IC9	C3
IC10	B1
IC11	B1
IC12	B1
IC13	B3
IC14	B3
IC15	A2
IC16	A2
IC17	A3
IC18	C2


MOTHER BOARD
VRBF500P4B
MOTHER
MIC BOARD
VRYF500P2A
MIC
CN1
SW1
C1
C2
CN101
E1
GROUND
(PATTERN SIDE)
PATTERN SIDE
INTERMEDIATE PATTERN
(COMPONENT SIDE)
COMPONENT SIDE
PATTERN SIDE
SCENE FILE
SHUTTER 1
SHUTTER SELECT
COOLER
TALLY
EVF
PAGE
USERSET
ITEM
UP
DOWN
HIBAND
DTL LEVEL
RESET
AUDIO CONT
BATT WARN
FRONT
LENS
DRIVE
PREAMP
CHECK
POWER
SYSCON
A GND
D GND
DCV
D
C
B
A
1
2
3
4
5

	IC1	IC3	IC4	IC5	IC7	IC9	IC10	IC11	IC12	IC13	IC14	IC15	IC16	IC17
Pin 1	0.1	4.9	-	-	0.0	2.7	0.0	-	0.0	0.0	9.2	2.5	1.0	2.5
2	0.1	4.9	4.9	4.9	4.5	2.7	4.9	0.0	0.0	4.5	2.5	4.0	1.0	2.5
3	0.0	4.8	0.0	0.0	4.9	2.7	0.0	0.0	0.0	4.9	4.9	1.4	1.0	2.5
4	4.9	4.8	0.0	4.9	0.0	2.7	0.0	4.9	4.9	0.0	0.0	4.9	7.0	7.0
5	4.8	4.9	4.9	4.9	4.9	0.3	0.0	4.9	4.9	5.0	2.3	1.6	1.0	3.3
6	4.9	0.0			0.0	-	0.0			0.0	2.3	0.0	1.1	3.3
7	0.0	0.0			4..9	2.2	0.0			5.0	0.0	0.0	1.2	3.3
8	4.9	0.0			0.0	1.1	0.0			0.0	5.0	0.0	-2.7	1.5
9	4.8	4.7			4.9	1.5	0.6			5.0		0.1	1.0	1.5
10	4.9	4.7			0.0	4.4	0.6			0.0		0.1	1.0	1.5
11	4.9	4.7			4.9		0.0			0.1		0.1	-4.4	-4.4
12	2.1	4.9			0.0		0.0			0.8		4.9	1.4	0.0
13	1.4	4.8			4.8		0.0			0.8		1.4	1.4	0.0
14	4.9	4.8			4.5		0.0			5.0		4.0	1.4	0.0
15		4.9			0.0		0.5			0.0		1.0		
16		4.9			4.9		4.9			5.0		5.0		

	IC18	IC19	IC20	IC24	IC25	IC30	IC31	IC32
Pin 1	0.0	4.9	4.9	3.4	1.0	-	1.5	4.9
2	0.0	2.0	3.8	3.4	1.0	0.0	4.3	4.9
3	0.0	0.1	0.1	1.6	0.0	0.0	0.0	0.0
4	-4.4	3.8	2.0	1.6	1.8	4.9	1.5	4.9
5	0.1	4.9	3.8	-	0.0	4.9	0.0	4.9
6	0.1	0.0	0.0	0.3	0.0		4.9	
7	0.1	0.0	0.0	0.3	0.0		0.0	
8	7.0	0.0	0.0	0.3	0.0		0.0	
9		0.1	0.0	9.4	0.0		0.0	
10		0.1	0.0	9.4	0.0		0.0	
11		0.0	0.0	9.5	0.0		0.0	
12		4.9	0.0	4.9	0.0		0.0	
13		0.0	0.0	3.4	0.0		0.0	
14		4.9	0.0	3.4	0.0		4.9	
15		4.9	3.6	3.4	0.0			
16		4.9	4.9	9.6	5.0			

	Pin1	Pin2	Pin3	Pin4	Pin5
IC21	4.9	4.9	0.0	0.0	4.9
IC22	0.0	0.0	0.0	0.0	4.9
IC23	-	4.8	0.0	0.0	4.9

	B	C	E
Q1	4.9	0.0	4.9
2	4.9	0.0	0.0
3	0.6	0.0	0.0
4	7.6	8.2	8.2
5	9.2	0.3	8.4
6	6.3	0.6	6.3
7	10.2	10.2	9.6
8	0.6	0.0	0.0
9	0.0	9.4	0.0

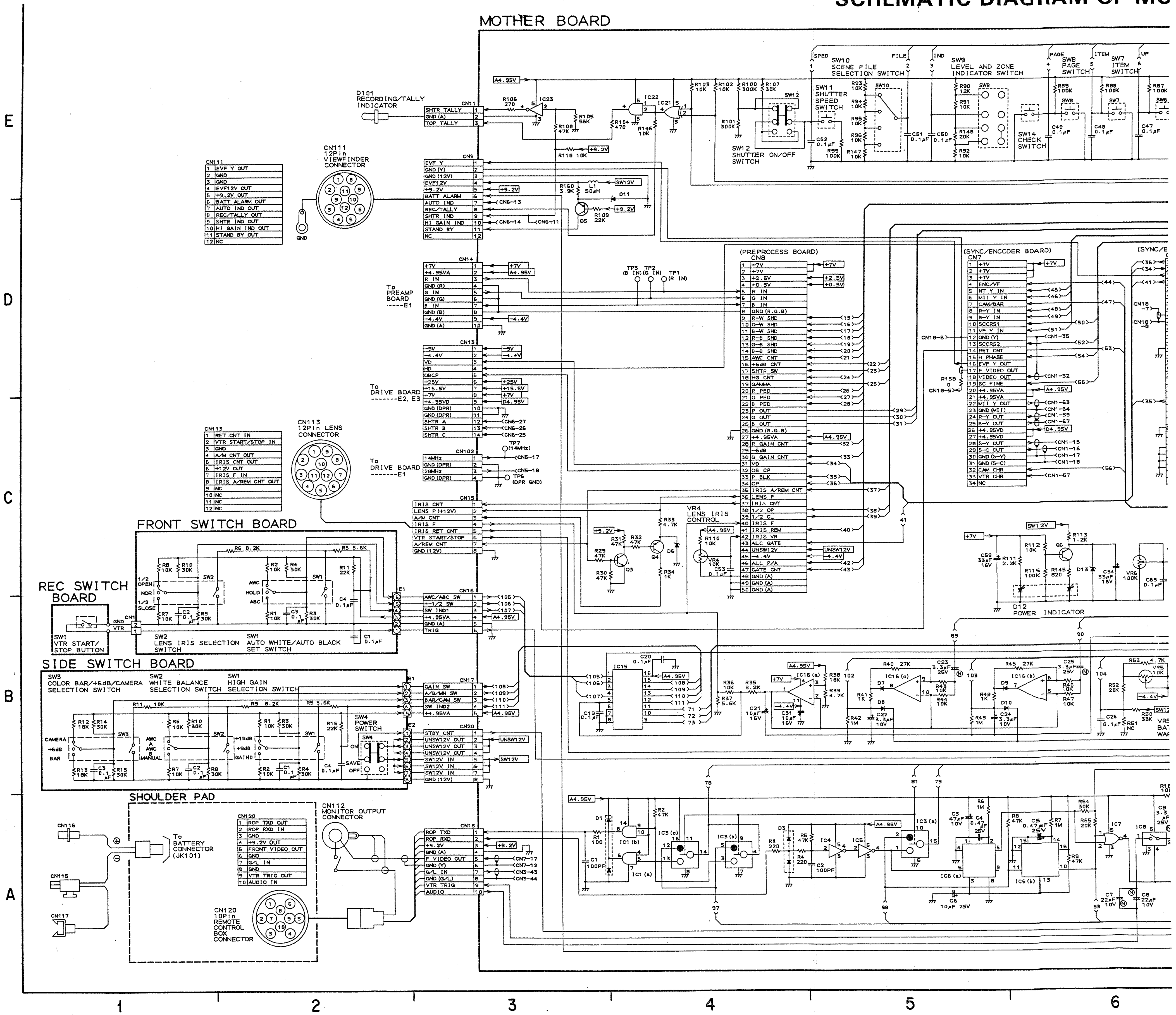
<Index>

MOTHER BOARD

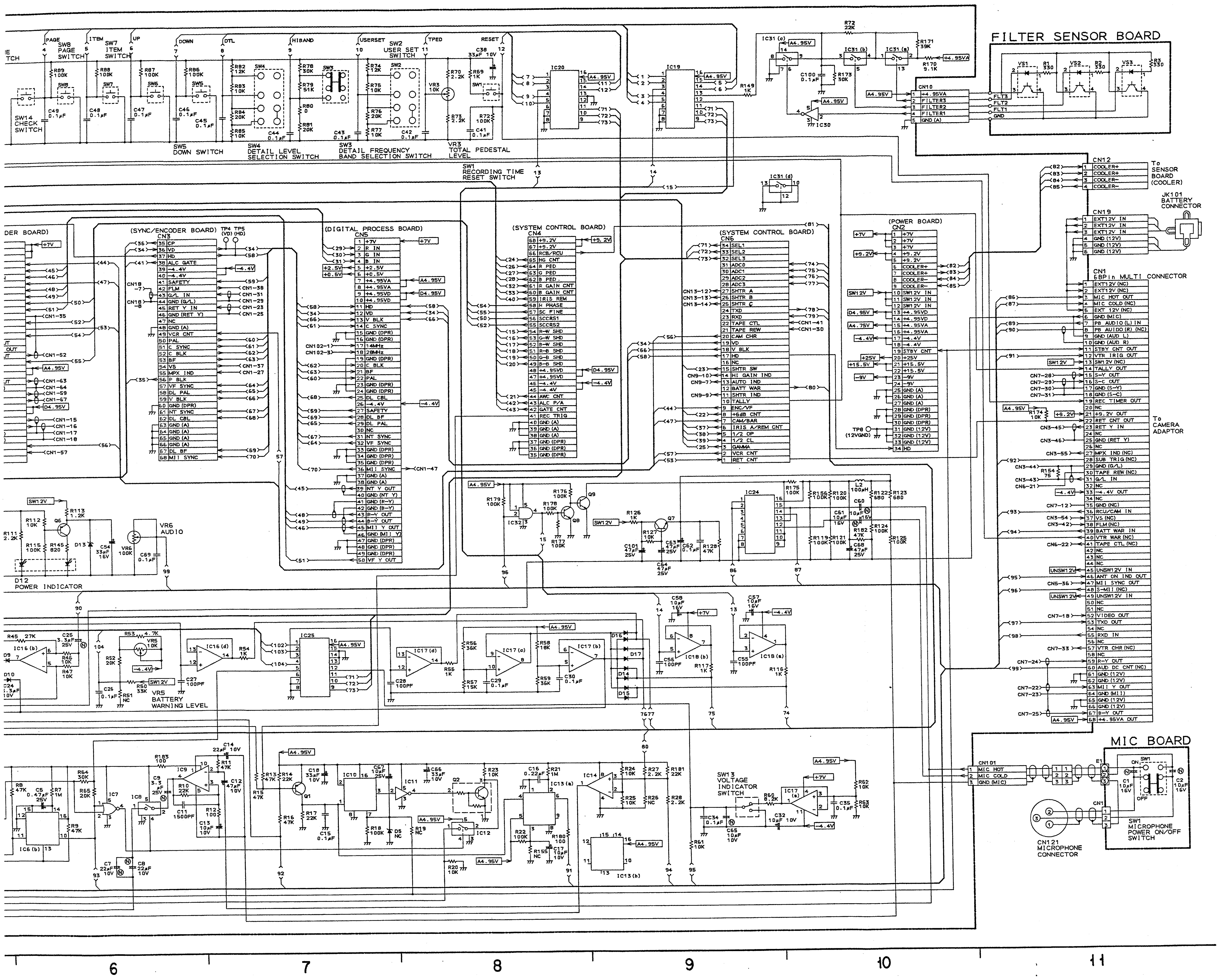
PATTERN SIDE

IC1	A2	IC19	C1	Q8	C3
IC3	B2	IC20	B2	Q9	C3
IC4	B2	IC21	C1	D1	A2
IC5	B2	IC22	C1	D3	B2
IC6	D3	IC23	C1	D7	A2
IC7	C3	IC24	C2	D8	A2
IC8	C3	IC25	A3	D9	A3
IC9	C3	IC30	C2	D10	A3
IC10	B1	IC31	C2	D12	A2
IC11	B1	IC32	C3	D13	A2
IC12	B1	Q1	B1	D14	A3
IC13	B3	Q2	B1	D15	A3
IC14	B3	Q3	A1	D16	A3
IC15	A2	Q4	B1	D17	A3
IC16	A2	Q5	C1		
IC17	A3	Q6	A2		
IC18	C2	Q7	C3		

SCHEMATIC DIAGRAM OF MO


MOTHER BOARD
D101 RECORDING/TALLY INDICATOR
CN111 12Pin VIEWFINDER CONNECTOR
CN111
1 EVF Y OUT
2 GND
3 GND
4 EVF12V OUT
5 +9.2V OUT
6 BATT ALARM OUT
7 AUTO IND OUT
8 REC/TALLY OUT
9 SHTR IND OUT
10 HI GAIN IND OUT
11 STAND BY OUT
12 NC
GND
CN113 12Pin LENS CONNECTOR
CN113
1 RET CNT IN
2 VTR START/STOP IN
3 GND
4 A/M CNT OUT
5 IRIS CNT OUT
6 +12V OUT
7 IRIS F IN
8 IRIS A/REM CNT OUT
9 NC
10 NC
11 NC
12 NC
To PREAMP BOARD E1
To DRIVE BOARD E2, E3
To DRIVE BOARD E1
FRONT SWITCH BOARD
SW2 LENS IRIS SELECTION SWITCH
SW1 AUTO WHITE/AUTO BLACK SET SWITCH
REC SWITCH BOARD
SW1 VTR START/STOP BUTTON
SIDE SWITCH BOARD
SW3 COLOR BAR/+6dB/CAMERA SELECTION SWITCH
SW2 WHITE BALANCE SELECTION SWITCH
SW1 HIGH GAIN SELECTION SWITCH
SW4 POWER SWITCH
SHOULDER PAD
CN116
CN115
CN117
To BATTERY CONNECTOR (JK101)
CN112 MONITOR OUTPUT CONNECTOR
CN120 10Pin REMOTE CONTROL BOX CONNECTOR
CN120
1 ROP TXD OUT
2 ROP RXD IN
3 GND
4 +9.2V OUT
5 FRONT VIDEO OUT
6 GND
7 G/L IN
8 GND
9 VTR TRIG OUT
10 AUDIO IN
SW10 SCENE FILE SELECTION SWITCH
SW9 LEVEL AND ZONE INDICATOR SWITCH
SW8 PAGE SWITCH
SW7 ITEM SWITCH
SW11 SHUTTER SPEED SWITCH
SW12 SHUTTER ON/OFF SWITCH
SW14 CHECK SWITCH
(PREPROCESS BOARD) CN8
(SYNC/ENCODER BOARD) CN7
VR4 LENS IRIS CONTROL
D12 POWER INDICATOR
TP3 TP2 TP1 (B IN) (G IN) (R IN)
TP7 (14MHz)
TP6 (DPR GND)
E
D
C
B
A
1
2
3
4
5
6

AGRAM OF MOTHER BOARD


FILTER SENSOR BOARD
MIC BOARD
SW8 PAGE SWITCH
SW7 ITEM SWITCH
SW14 CHECK SWITCH
SW5 DOWN SWITCH
SW4 DETAIL LEVEL SELECTION SWITCH
SW3 DETAIL FREQUENCY BAND SELECTION SWITCH
SW2 USER SET SWITCH
VR3 TOTAL PEDESTAL LEVEL
SW1 RECORDING TIME RESET SWITCH
(SYNC/ENCODER BOARD) CN3
(DIGITAL PROCESS BOARD) CN5
(SYSTEM CONTROL BOARD) CN4
(SYSTEM CONTROL BOARD) CN6
(POWER BOARD) CN2
CN12 To SENSOR BOARD (COOLER)
JK101 BATTERY CONNECTOR
CN19
CN1 68P in MULTI CONNECTOR
To CAMERA ADAPTOR
D12 POWER INDICATOR
VR6 AUDIO
VR5 BATTERY WARNING LEVEL
SW13 VOLTAGE INDICATOR SWITCH
CN121 MICROPHONE CONNECTOR
SW1 MICROPHONE POWER ON/OFF SWITCH
CN101 MIC HOT MIC COLD GND (MIC)
6
7
8
9
10
11

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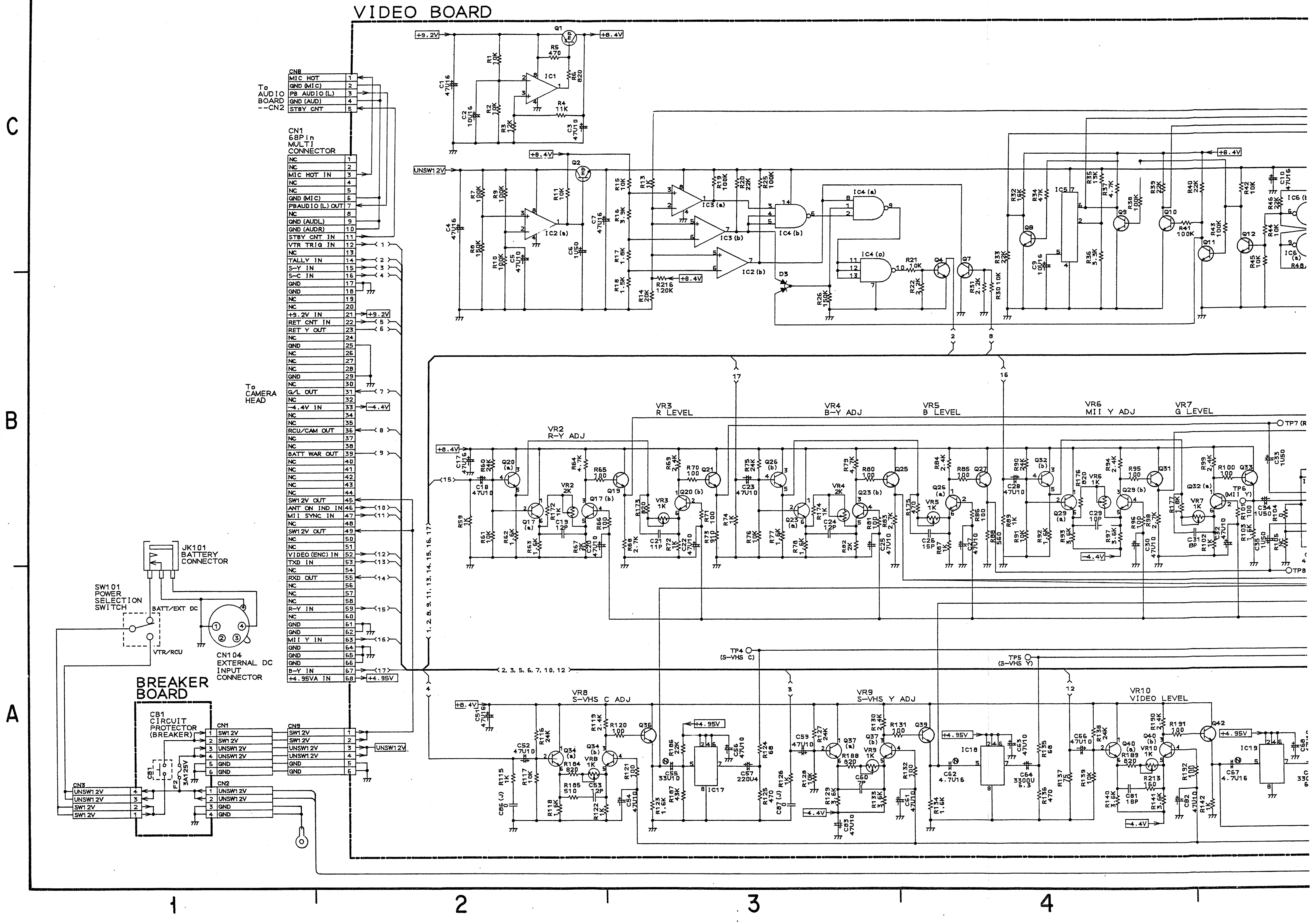
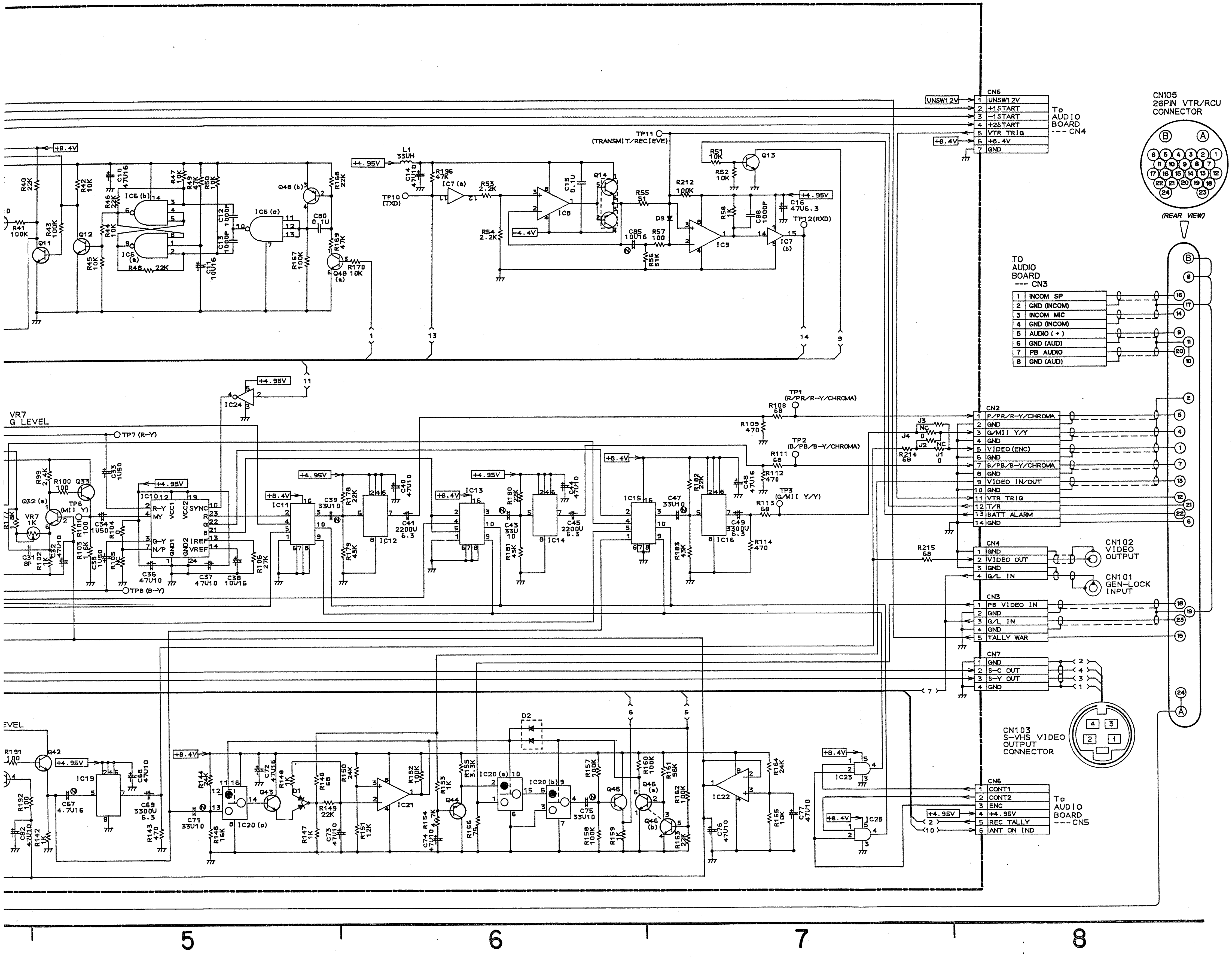
MOTHER BOARD

D6	C4
D11	D4
IC1	A4
IC3	A4, A5
IC4	A5
IC5	A5
IC6	A5, A6
IC7	A6
IC8	A6
IC9	A6
IC10	A7
IC11	A8
IC12	A8
IC13	A8, A9
IC14	A9
IC15	B4
IC16	B5, B6, B7
IC17	A10, B8, B9
IC18	B9
IC19	E9
IC20	E8
IC21	E4
IC22	E4
IC23	E3
IC24	C9
IC25	B7
IC30	E10
IC31	D10, E10
IC32	C8
Q1	A7
Q2	A8
Q3	C4
Q4	C4
Q5	D3
Q6	C6
Q7	C9
Q8	C8
Q9	C9
D1	A3
D3	A4
D7	B5
D8	B5
D9	B6
D10	B6
D12	B6
D13	C6
D14	B9
D15	B9
D16	B9
D17	B9

SCHEMATIC DIAGRAM OF VIDEO BOARD (CA


VIDEO BOARD
To AUDIO BOARD --CN2
CN8
MIC HOT
GND (MIC)
PB AUDIO (L)
GND (AUD)
STBY CNT
CN1 68Pin MULTI CONNECTOR
To CAMERA HEAD
MIC HOT IN
GND (MIC)
PBAUDIO (L) OUT
GND (AUDL)
GND (AUDR)
STBY CNT IN
VTR TRIG IN
TALLY IN
S-Y IN
S-C IN
+9.2V IN
RET CNT IN
RET Y OUT
G/L OUT
-4.4V IN
RCU/CAM OUT
BATT WAR OUT
SW12V OUT
ANT ON IND IN
MII SYNC IN
VIDEO (ENC) IN
TXD IN
RXD OUT
R-Y IN
MII Y IN
B-Y IN
+4.95VA IN
JK101 BATTERY CONNECTOR
SW101 POWER SELECTION SWITCH
BATT/EXT DC
VTR/RCU
CN104 EXTERNAL DC INPUT CONNECTOR
BREAKER BOARD
CB1 CIRCUIT PROTECTOR (BREAKER)
3A125V
CN1
CN2
CN3
CN9
SW12V
UNSW12V
GND
+9.2V
+8.4V
-4.4V
+4.95V
VR2 R-Y ADJ
VR3 R LEVEL
VR4 B-Y ADJ
VR5 B LEVEL
VR6 MII Y ADJ
VR7 G LEVEL
VR8 S-VHS C ADJ
VR9 S-VHS Y ADJ
VR10 VIDEO LEVEL
TP4 (S-VHS C)
TP5 (S-VHS Y)
TP6 (MII Y)
TP7
TP8
IC1
IC2
IC3
IC4
IC5
IC6
IC17
IC18
IC19
C
B
A
1
2
3
4

BOARD (CAMERA ADAPTOR)


CN5
1 UNSW12V
2 +1START
3 -1START
4 +2START
5 VTR TRIG
6 +8.4V
7 GND
To AUDIO BOARD --- CN4
CN105 26PIN VTR/RCU CONNECTOR
(REAR VIEW)
TO AUDIO BOARD --- CN3
1 INCOM SP
2 GND (INCOM)
3 INCOM MIC
4 GND (INCOM)
5 AUDIO (+)
6 GND (AUD)
7 PB AUDIO
8 GND (AUD)
CN2
1 R/PR/R-Y/CHROMA
2 GND
3 G/MII Y/Y
4 GND
5 VIDEO (ENC)
6 GND
7 B/PB/B-Y/CHROMA
8 GND
9 VIDEO IN/OUT
10 GND
11 VTR TRIG
12 T/R
13 BATT ALARM
14 GND
CN4
1 GND
2 VIDEO OUT
3 GND
4 G/L IN
CN102 VIDEO OUTPUT
CN101 GEN-LOCK INPUT
CN3
1 PB VIDEO IN
2 GND
3 G/L IN
4 GND
5 TALLY WAR
CN7
1 GND
2 S-C OUT
3 S-Y OUT
4 GND
CN103 S-VHS VIDEO OUTPUT CONNECTOR
CN6
1 CONT1
2 CONT2
3 ENC
4 +4.95V
5 REC TALLY
6 ANT ON IND
To AUDIO BOARD --- CN5
TP1 (R/PR/R-Y/CHROMA)
TP2 (B/PB/B-Y/CHROMA)
TP3 (G/MII Y/Y)
TP7 (R-Y)
TP8 (B-Y)
TP10 (TXD)
TP11 (TRANSMIT/RECIEVE)
TP12 (RXD)
VR7 G LEVEL
5
6
7
8

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VIDEO BOARD

IC1	C2
IC2	B3, C2
IC3	C2
IC4	C3
IC5	B4
IC6	C5
IC7	C6, C7
IC8	C6
IC9	C7
IC10	B5
IC11	B5
IC12	B6
IC13	B6
IC14	B6
IC15	B6
IC16	B7
IC17	A3
IC18	A4
IC19	A5
IC20	A5, A6
IC21	A6
IC22	A7
IC23	A7
IC24	B5
IC25	A7
Q1	C2
Q2	C2
Q4	C4
Q7	C4
Q8	C4
Q9	C4
Q10	C4
Q11	C5
Q12	C5
Q13	C7
Q14	C6
Q17	B2
Q19	B3
Q20	B2, B3
Q21	B3
Q23	B3
Q25	B4
Q26	B3, B4
Q27	B4
Q29	B4
Q31	B4
Q32	B4
Q33	B5
Q34	A2
Q36	A3
Q37	A3
Q39	A4
Q40	A4
Q42	A5
Q43	A5
Q44	A6
Q45	A6
Q46	A7
Q48	B5, C5
D1	A5
D2	A6
D3	B3
D9	C7

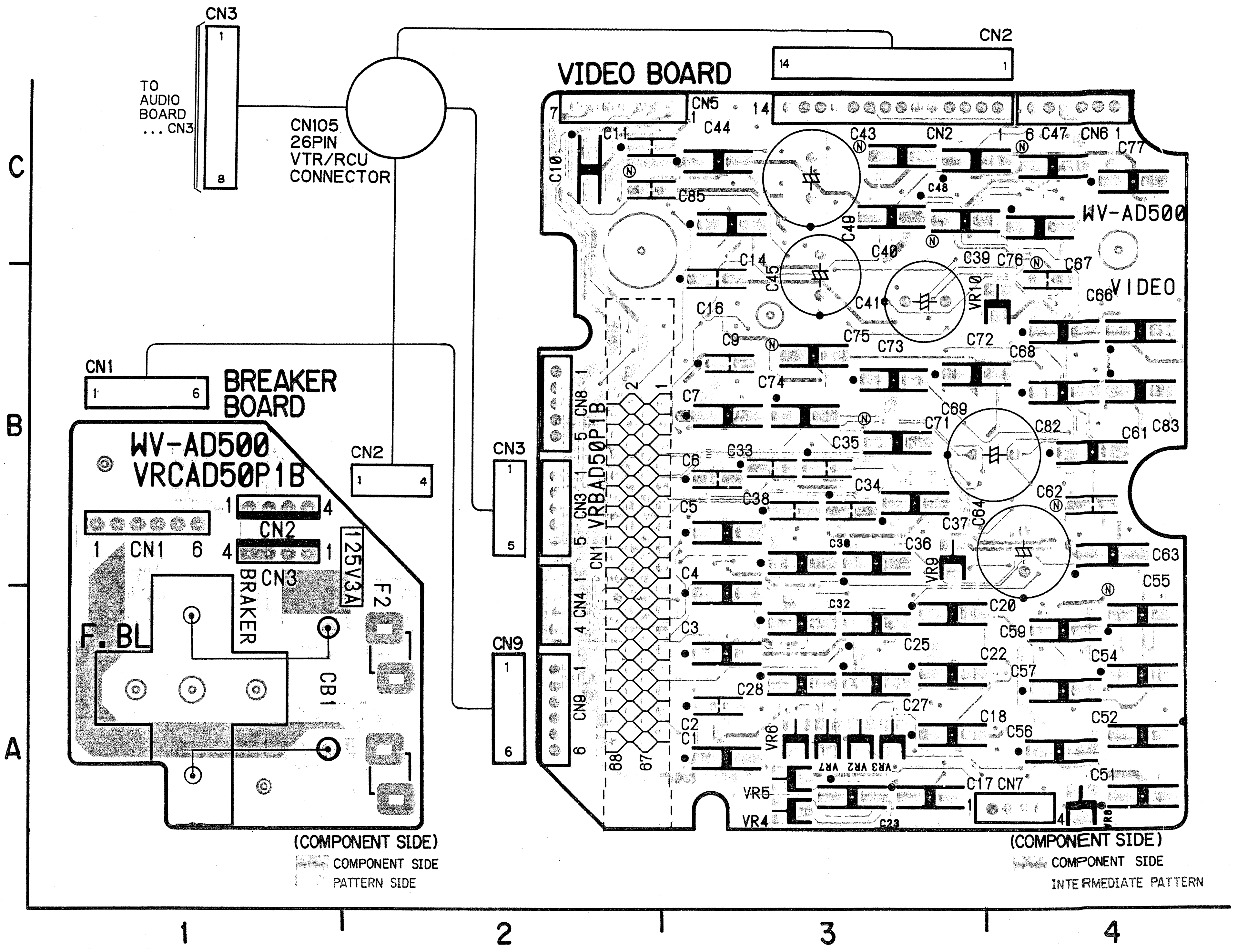
	IC1	IC2	IC3	IC4	IC5	IC6	IC7	IC8	IC9	IC11	IC12	IC13	IC14	IC15	IC16	IC17	IC20	IC24
Pin 1	6.8	0.1	0	1.4	0.6	0.7	5.0	2.9	5.0	0	2.3	0	2.3	3.8	3.8	2.2	0	0.5
2	0.5	0.4	1.3	1.1	0.2	0.7	0	2.4	1.9	0.7	5.0	0.7	5.0	2.9	8.9	5.0	2.9	0.4
3	4.6	0.5	0	0	0.6	0.6	1.6	2.4	2.4	3.2	2.1	-	2.1	3.9	3.6	2.1	0	0
4	0	0	0	0	0	0.7	0	-4.3	0	3.3	5.0	-	5.0	3.8	8.9	5.0	0	0
5	-	1.3	1.3	0	0	0.7	1.7	-	-	3.3	3.3	0.7	3.3	3.9	5.7	3.2	0	5.0
6	-	0.7	1.7	0.7	7.3	0.3	0	-	-	0	5.0	0	5.0	0	8.9	5.0	0	
7	8.0	0	0	0	0.7	0	1.7	4.5	0	0	2.5	0	2.5	0	5.0	2.4	0	
8	9.3	0.8	0.7	0	0.7	0.3	0	5.0	5.0	0	0	0	0	0	0	0	0	
9				0.7		0.7	1.0			0		0		0			8.8	
10				0.5		0.7	0			8.9		8.9		8.9			8.8	
11				0.7		0	5.0			-		-		0.8			8.8	
12				0.7		0	4.8			-		0.7		0.8			-	
13				0.7		0	1.4			-		0.7		0.4			3.4	
14				0.7		0.7	5.0			-		0.7		0.9			3.5	
15							5.0			0.7		0.7		1.0			0	
16							-			8.9		8.9		8.9			8.9	

	IC10	IC18	IC19	IC21	IC22	IC23	IC25
Pin 1	0	2.3	2.4	8.8	2.6	0	8.8
2	1.3	5.0	5.0	1.9	2.6	8.8	8.8
3	1.1	2.0	2.0	2.9	2.6	0	0
4	0.4	5.0	5.0	0	0	0	8.9
5	3.2	3.1	3.1	-	-	8.9	8.9
6	3.0	5.0	5.0	-	-		
7	5.0	2.3	2.2	0	7.7		
8	2.6	0	0	8.9	8.9		
9	2.6						
10	0						
11	1.7						
12	5.0						
13	1.3						
14	2.2						
15	2.7						
16	0.5						
17	2.0						
18	0.5						
19	5.0						
20	0.7						
21	0.7						
22	-						
23	0.7						
24	0						

	B	C	E
Q1	8.6	8.9	9.3
2	0.1	0.8	0.6
4	0	5.0	0
7	0	0	0
8	0.6	2.9	0
9	4.6	8.9	3.9
10	0.6	0.1	0
11	0.6	1.8	0
12	0.1	0.7	0
13	0	5.0	0
19	4.1	8.9	3.3
21	3.9	8.9	3.3
25	4.0	8.9	3.3
27	3.9	8.9	3.3
31	4.5	8.9	3.8
33	4.0	8.9	3.3
36	4.0	8.9	3.3
42	4.6	8.9	3.8
43	3.5	8.9	1.1
44	2.2	0	2.9
45	3.8	8.9	3.2

	Q14	Q17	Q20	Q23	Q26	Q29	Q32	Q34	Q37	Q40	Q46	Q48
Pin 1	5.0	8.9	3.9	8.9	4.0	8.9	4.0	8.9	8.9	8.9	0	0.7
2	2.9	2.6	2.6	2.6	2.6	8.9	2.6	2.6	2.6	2.6	0.1	0.7
3	2.4	4.1	8.8	4.1	8.9	4.5	1.9	4.0	4.6	4.6	0.1	0.7
4	-4.3	1.0	2.5	2.7	2.5	2.6	2.5	2.6	2.6	2.6	0	0
5	2.9	2.0	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.6	0
6	2.9	2.0	2.0	2.0	2.0	1.9	2.0	2.0	1.9	2.0	8.8	0

COMPONENT SIDE


CN3
1
8
TO
AUDIO
BOARD
... CN3
CN105
26PIN
VTR/RCU
CONNECTOR
CN2
14
1
VIDEO BOARD
WV-AD500
VIDEO
CN5
CN6
CN7
CN8
CN9
CN1
CN4
VRBAD50P1B
C
B
A
1
2
3
4
CN1
1
6
BREAKER
BOARD
WV-AD500
VRCAD50P1B
CN2
1
4
CN1
CN3
BRAKER
125V3A
F2
CB1
F.BL
CN3
1
5
CN9
1
6
C1
C2
C3
C4
C5
C6
C7
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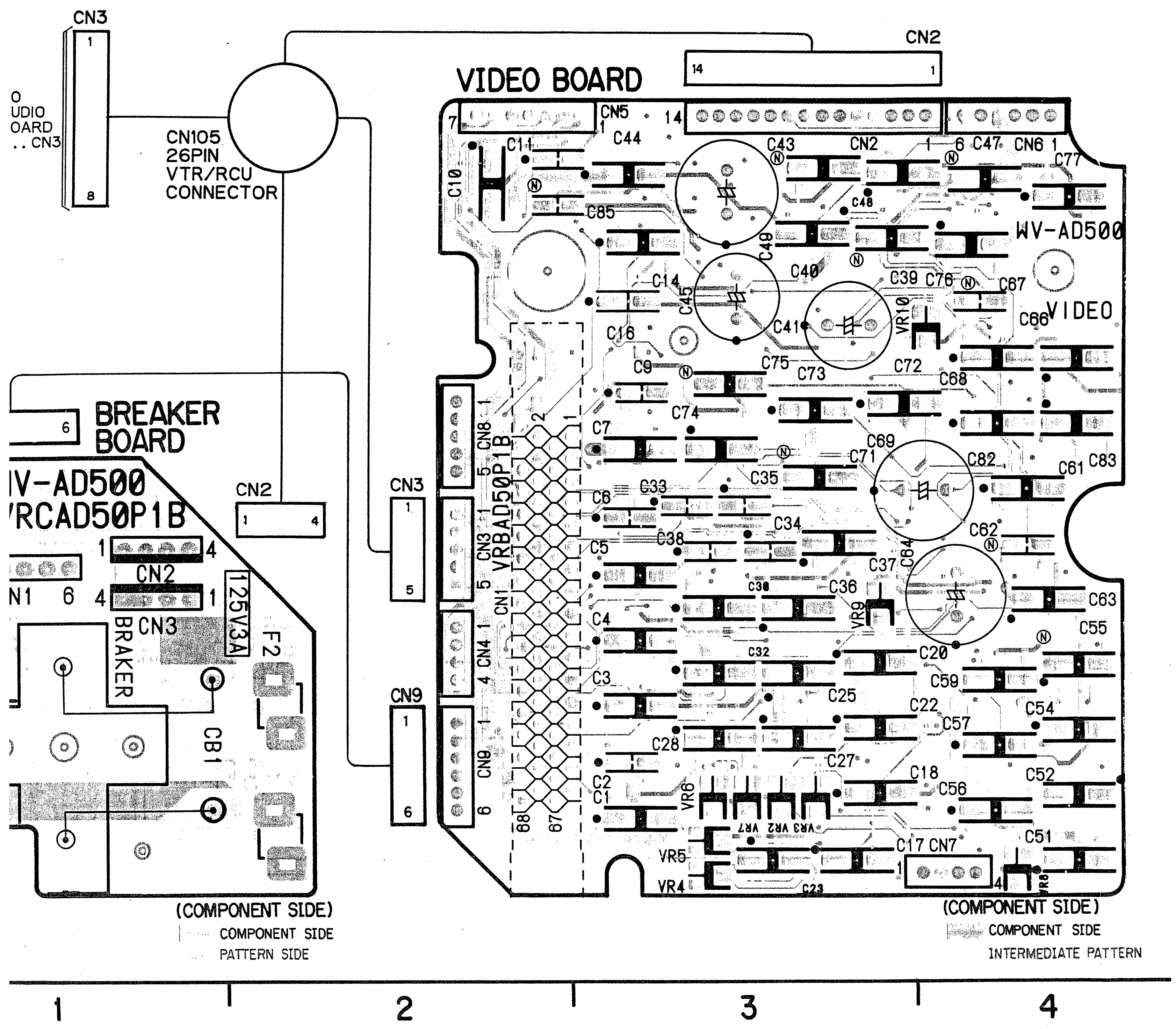
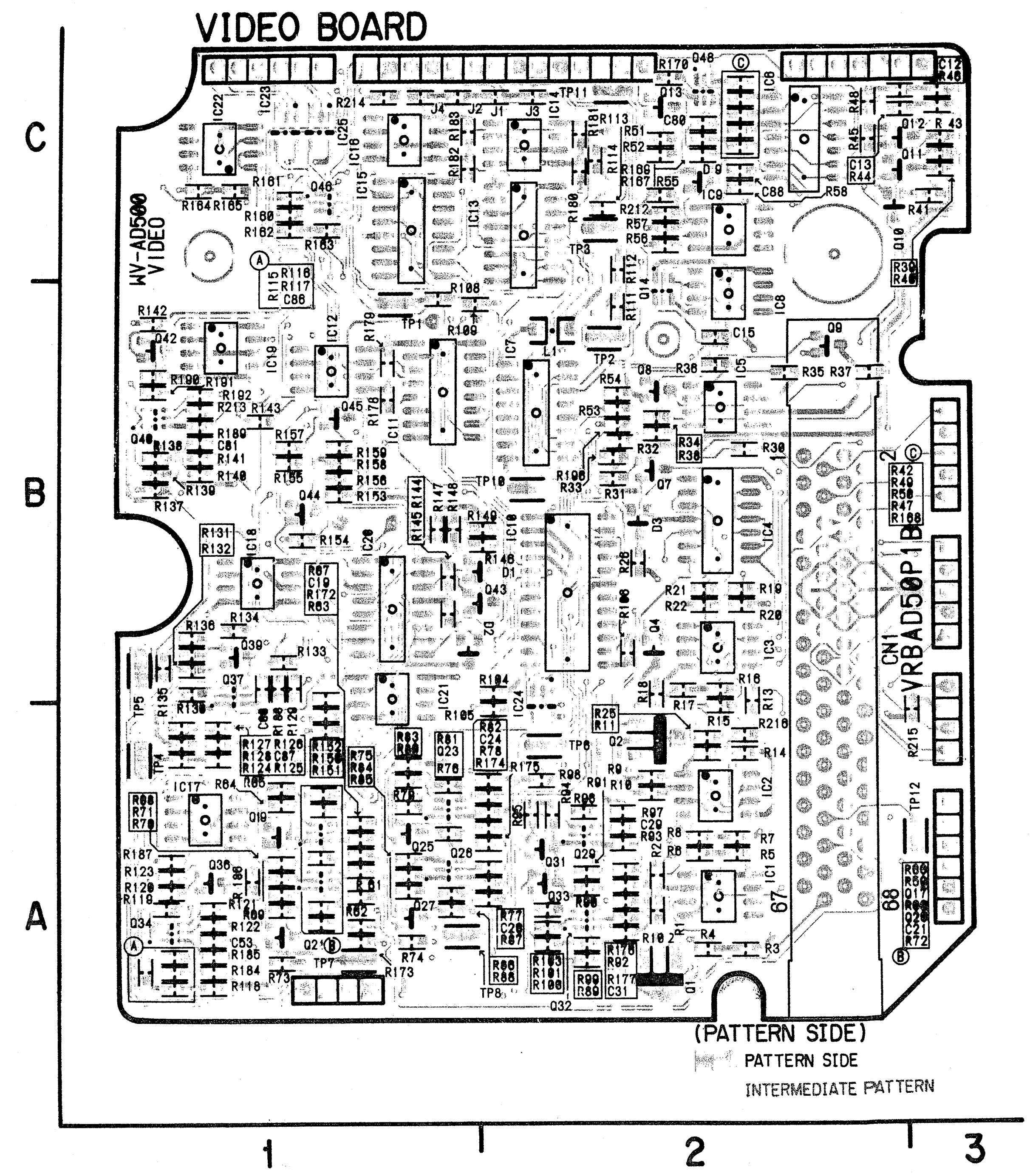
C62
C63
C64
C66
C67
C68
C69
C71
C72
C73
C74
C75
C76
C77
C82
C83
C85
VR1
VR2
VR3
VR4
VR5
VR6
VR7
VR8
VR9
VR10
(COMPONENT SIDE)
COMPONENT SIDE
PATTERN SIDE
(COMPONENT SIDE)
COMPONENT SIDE
INTERMEDIATE PATTERN

CONDUCTOR VIEW OF VIDEO BOARD (CAMERA ADAPTOR)

IT SIDE


CN3
CN105
26PIN
VTR/RCU
CONNECTOR
CN2
VIDEO BOARD
BREAKER BOARD
WV-AD500
VRCAD50P1B
CB1
F2
125V3A
BRAKER
CN9
CN5
CN6
CN7
CN8
CN1
CN4
WV-AD500
VIDEO
VR4
VR5
VR6
VR7
VR8
VR9
VR10
(COMPONENT SIDE)
COMPONENT SIDE
PATTERN SIDE
(COMPONENT SIDE)
COMPONENT SIDE
INTERMEDIATE PATTERN
1
2
3
4

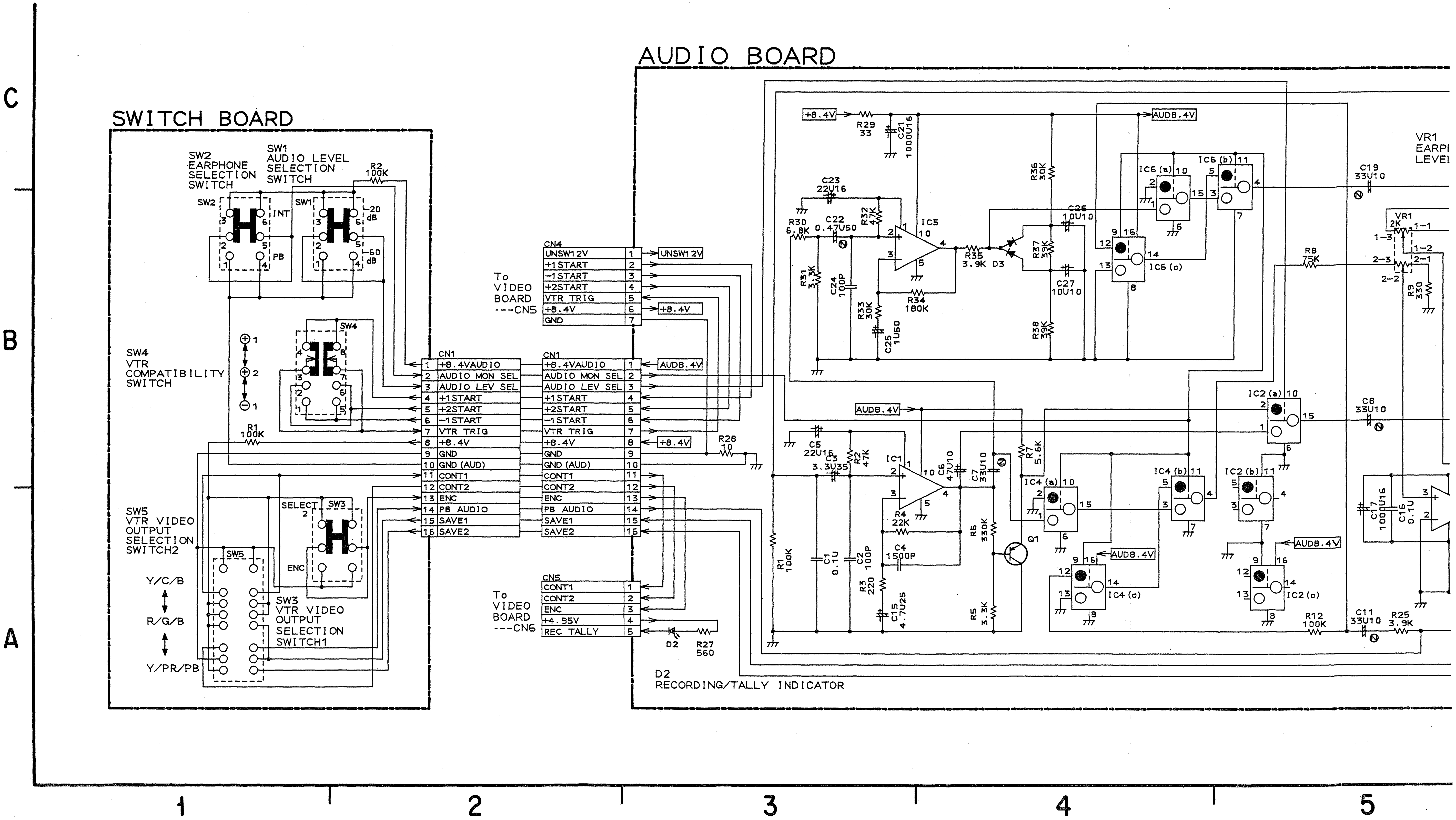
PATTERN SIDE


VIDEO BOARD
C
B
A
WV-AD500
VIDEO
VRBAD50P1B
CN1
(PATTERN SIDE)
PATTERN SIDE
INTERMEDIATE PATTERN
1
2
3

<Index>

VIDEO BOARD		IC10	B2	IC21	B1	Q10	C3	Q25	A1	Q42	B1
PATTERN SIDE		IC11	B1	IC22	C1	Q11	C3	Q27	A1	Q43	B2
IC1	A2	IC12	B1	IC23	C1	Q12	C3	Q29	A2	Q44	B1
IC2	A2	IC13	C1	IC24	A2	Q13	C2	Q31	A2	Q45	B1
IC3	B2	IC14	C2	IC25	C1	Q14	B2	Q32	A2	Q46	C1
IC4	B2	IC15	C1	Q1	A2	Q17	A3	Q33	A2	Q48	C2
IC5	B2	IC16	C1	Q2	A2	Q19	A1	Q34	A1	D1	B2
IC6	C2	IC17	A1	Q4	B2	Q20	A3	Q36	A1	D2	B2
IC7	B2	IC18	B1	Q7	B2	Q21	A1	Q37	B1	D3	B2
IC8	B2	IC19	B1	Q8	B2	Q23	A1	Q39	B1	D9	C2
IC9	C2	IC20	B1	Q9	B2	Q25	A1	Q40	B1		

SCHEMATIC DIAGRAM OF AUDIO BOARD (CAMERA ADAPTOR)

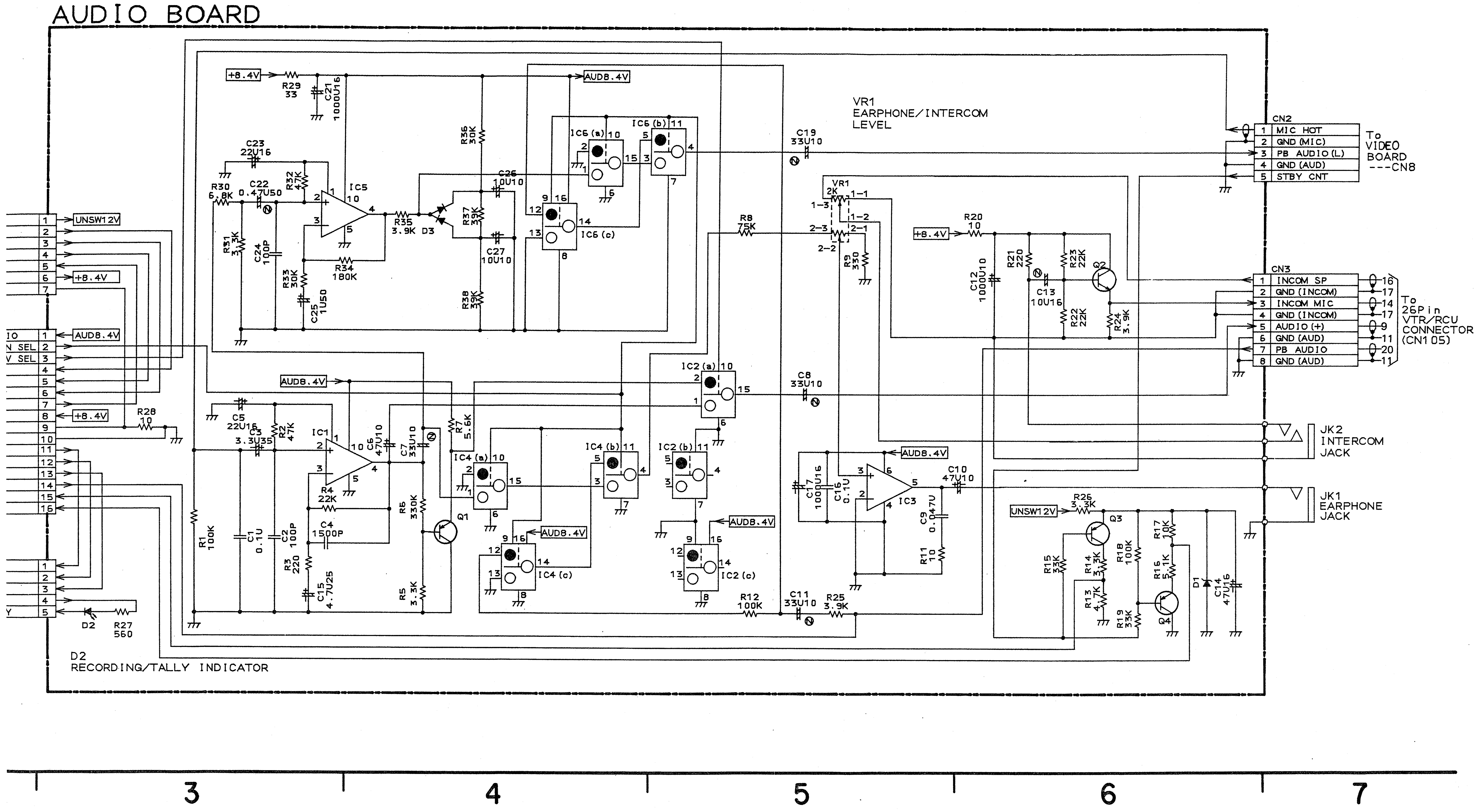

AUDIO BOARD
SWITCH BOARD
SW2 EARPHONE SELECTION SWITCH
SW1 AUDIO LEVEL SELECTION SWITCH
INT
PB
-20 dB
-60 dB
R2 100K
SW4 VTR COMPATIBILITY SWITCH
SW5 VTR VIDEO OUTPUT SELECTION SWITCH2
SW3 VTR VIDEO OUTPUT SELECTION SWITCH1
SELECT
ENC
Y/C/B
R/G/B
Y/PR/PB
R1 100K
CN1
+8.4VAUDIO
AUDIO MON SEL
AUDIO LEV SEL
+1START
+2START
-1START
VTR TRIG
+8.4V
GND
GND (AUD)
CONT1
CONT2
ENC
PB AUDIO
SAVE1
SAVE2
CN4
UNSW12V
To VIDEO BOARD ---CN5
CN5
+4.95V
REC TALLY
To VIDEO BOARD ---CN6
D2
R27 560
D2 RECORDING/TALLY INDICATOR
R28 10
AUD8.4V
R29 33
C21 1000U16
C23 22U16
R30 6.8K
C22 0.47U50
R32 47K
IC5
R31 3.3K
C24 100P
R33 30K
C25 1U50
R34 180K
R35 3.9K
D3
R36 30K
R37 39K
R38 39K
C26 10U10
C27 10U10
IC6 (a)
IC6 (b)
IC6 (c)
C19 33U10
VR1 EARPHONE LEVEL
VR1 2K
R8 75K
R9 330
C5 22U16
C3 3.3U35
R2 47K
IC1
C6 47U10
C7 33U10
R7 5.6K
R4 22K
C4 1500P
R6 330K
Q1
R5 3.3K
R1 100K
C1 0.1U
C2 100P
R3 220
C15 4.7U25
IC4 (a)
IC4 (b)
IC4 (c)
IC2 (a)
IC2 (b)
IC2 (c)
C8 33U10
C17 1000U16
C16 0.1U
R12 100K
C11 33U10
R25 3.9K
C
B
A
1
2
3
4
5

<Index>

AUDIO BOARD

IC1	B3	IC6	B4, C4	D1	A6
IC2	A5, B5	Q1	A4	D2	A3
IC3	A5	Q2	B6	D3	B4
IC4	A4, B4	Q3	A6		
IC5	B4	Q4	A6		

SCHEMATIC DIAGRAM OF AUDIO BOARD (CAMERA ADAPTOR)

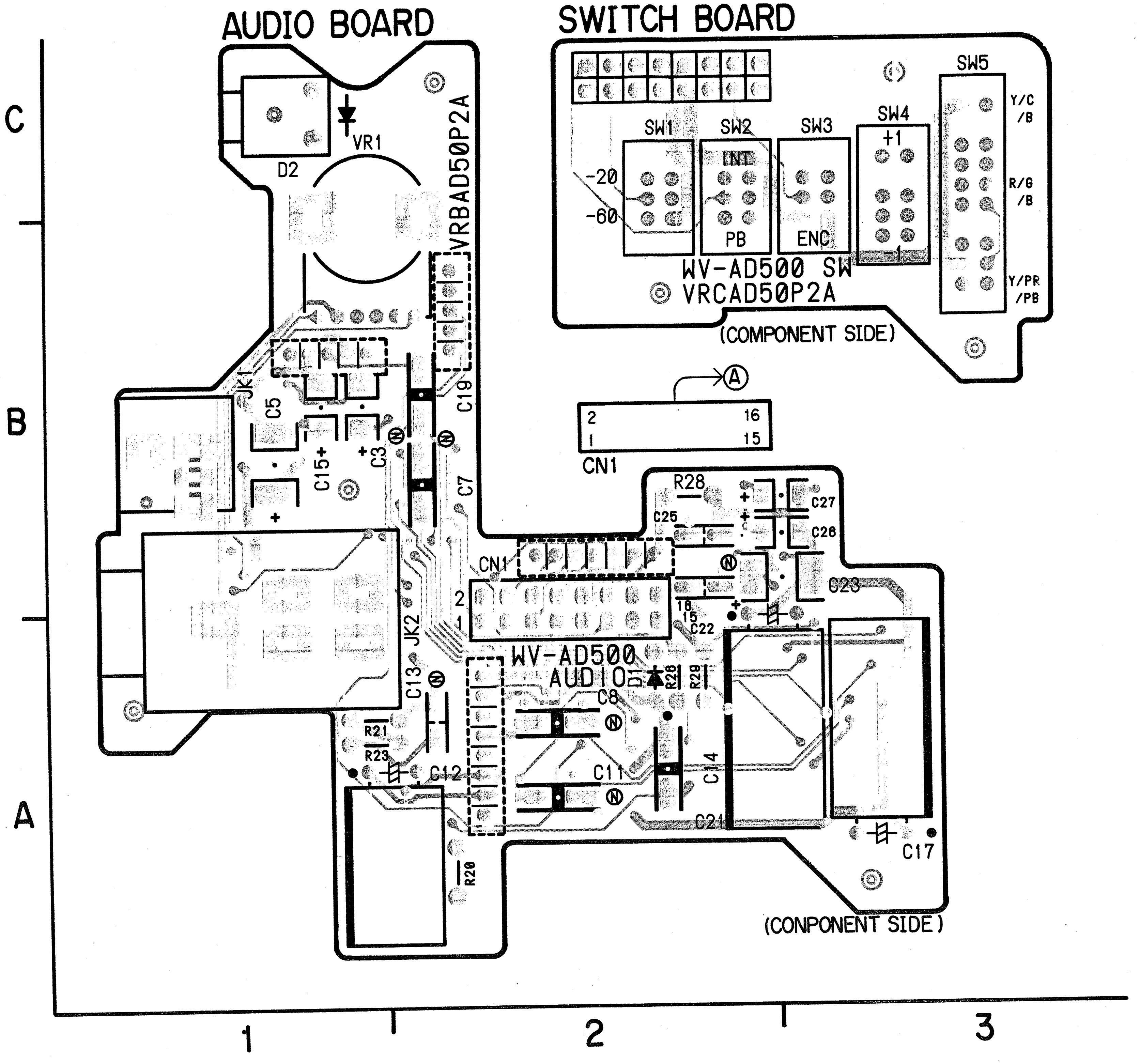

AUDIO BOARD
+8.4V
R29 33
C21 1000U16
AUD8.4V
R36 30K
IC6 (a)
IC6 (b)
C23 22U16
R32 47K
C22 0.47U50
R30 6.8K
IC5
R31 3.3K
C24 100P
R33 30K
C25 1U50
R34 180K
R35 3.9K
D3
R37 39K
C26 10U10
C27 10U10
R38 39K
IC6 (c)
VR1 EARPHONE/INTERCOM LEVEL
C19 33U10
VR1 2K
R8 75K
R9 330
R20 10
R21 220
R23 22K
Q2
C12 1000U10
C13 10U16
R22 22K
R24 3.9K
CN2
1 MIC HOT
2 GND (MIC)
3 PB AUDIO (L)
4 GND (AUD)
5 STBY CNT
To VIDEO BOARD ---CN8
CN3
1 INCOM SP
2 GND (INCOM)
3 INCOM MIC
4 GND (INCOM)
5 AUDIO (+)
6 GND (AUD)
7 PB AUDIO
8 GND (AUD)
16 17 14 17 9 11 20 11
To 26Pin VTR/RCU CONNECTOR (CN105)
UNSW12V
+8.4V
IO
N SEL
V SEL
R28 10
IC2 (a)
C8 33U10
C5 22U16
C3 3.3U35
R2 47K
IC1
C6 47U10
C7 33U10
R7 5.6K
IC4 (a)
IC4 (b)
IC2 (b)
R4 22K
C4 1500P
R6 330K
Q1
R1 100K
C1 0.1U
C2 100P
R3 220
C15 4.7U25
R5 3.3K
IC4 (c)
IC2 (c)
R12 100K
C11 33U10
R25 3.9K
C17 100U16
C16 0.1U
IC3
C10 47U10
C9 0.047U
R11 10
R26 3.3K
Q3
R15 33K
R14 3.3K
R13 4.7K
R18 100K
R17 10K
R16 5.1K
R19 33K
Q4
D1
C14 47U16
JK2 INTERCOM JACK
JK1 EARPHONE JACK
D2
R27 560
D2 RECORDING/TALLY INDICATOR
3
4
5
6
7

CONDUCTOR VIEW OF AUDIO BOARD (CAMERA ADAPTOF

	IC1	IC2	IC3	IC4	IC5	IC6
Pin 1	4.5	4.2	1.6	0.3	4.5	4.5
2	4.5	1.0	0.3	0.3	4.5	0.3
3	4.5	-	-	0.3	4.5	4.5
4	4.5	-	0.3	0.3	4.5	4.5
5	0.3	-	4.2	0.3	0.3	0.3
6	-	0.3	-	0.3	-	0.3
7	3.8	0.3	4.1	0.3	3.8	8.0
8	0.5	0.3	-	0.3	0.5	8.0
9	2.1	0.3		7.9	2.1	8.0
10	8.0	7.9		7.9	8.0	-
11		0.3		7.9		0.4
12		-		0.6		0.4
13		-		0.3		4.6
14		-		0.3		8.0
15		4.1		0.3		
16		8.9		8.0		

	B	C	E
Q1	0.4	0.4	1.1
2	4.4	8.8	3.8
3	10.2	0.3	1.0
4	7.9	0.3	1.0

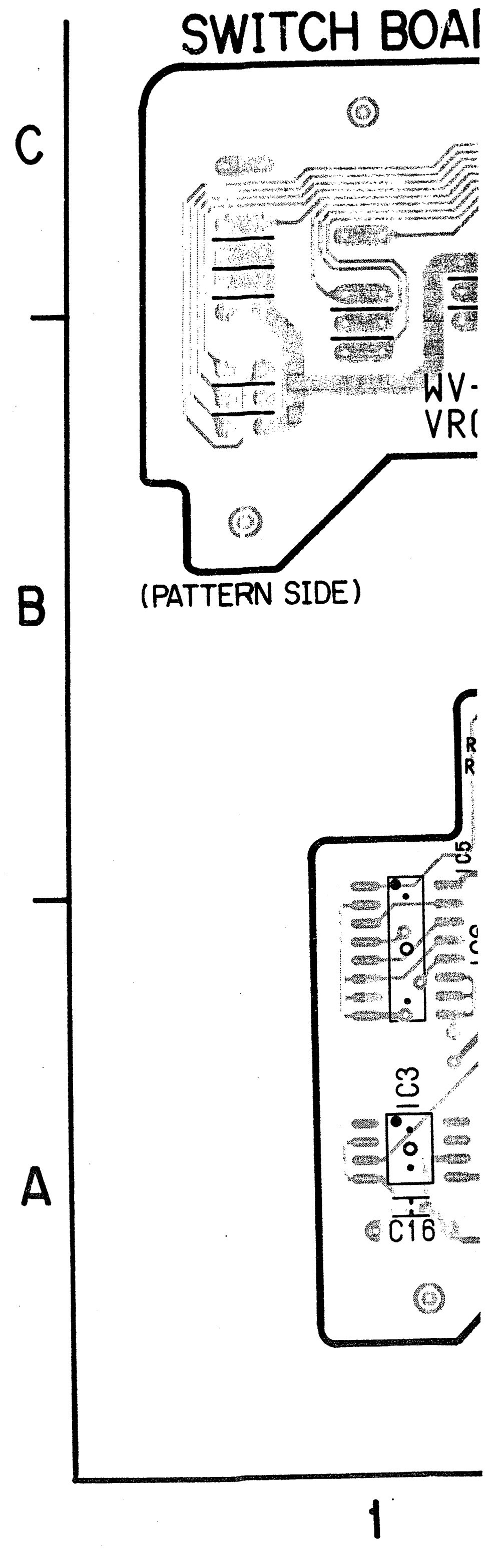
COMPONENT SIDE


AUDIO BOARD
SWITCH BOARD
C
B
A
1
2
3
D2
VR1
VRBAD50P2A
JK1
C5
C15+
C3
C19
C7
JK2
C13
CN1
2
1
R21
R23
C12
R20
WV-AD500
AUDIO
D1
R26
R29
C8
C11
C14
C21
C17
C22
16
15
C23
C25
C26
C27
R28
SW1
SW2
SW3
SW4
SW5
-20
-60
INT
PB
ENC
+1
Y/C
/B
R/G
/B
Y/PR
/PB
WV-AD500 SW
VRCAD50P2A
(COMPONENT SIDE)
A
2
16
1
15
CN1
(CONPONENT SIDE)

<Index>
AUDIO BOARD
COMPONENT SIDE

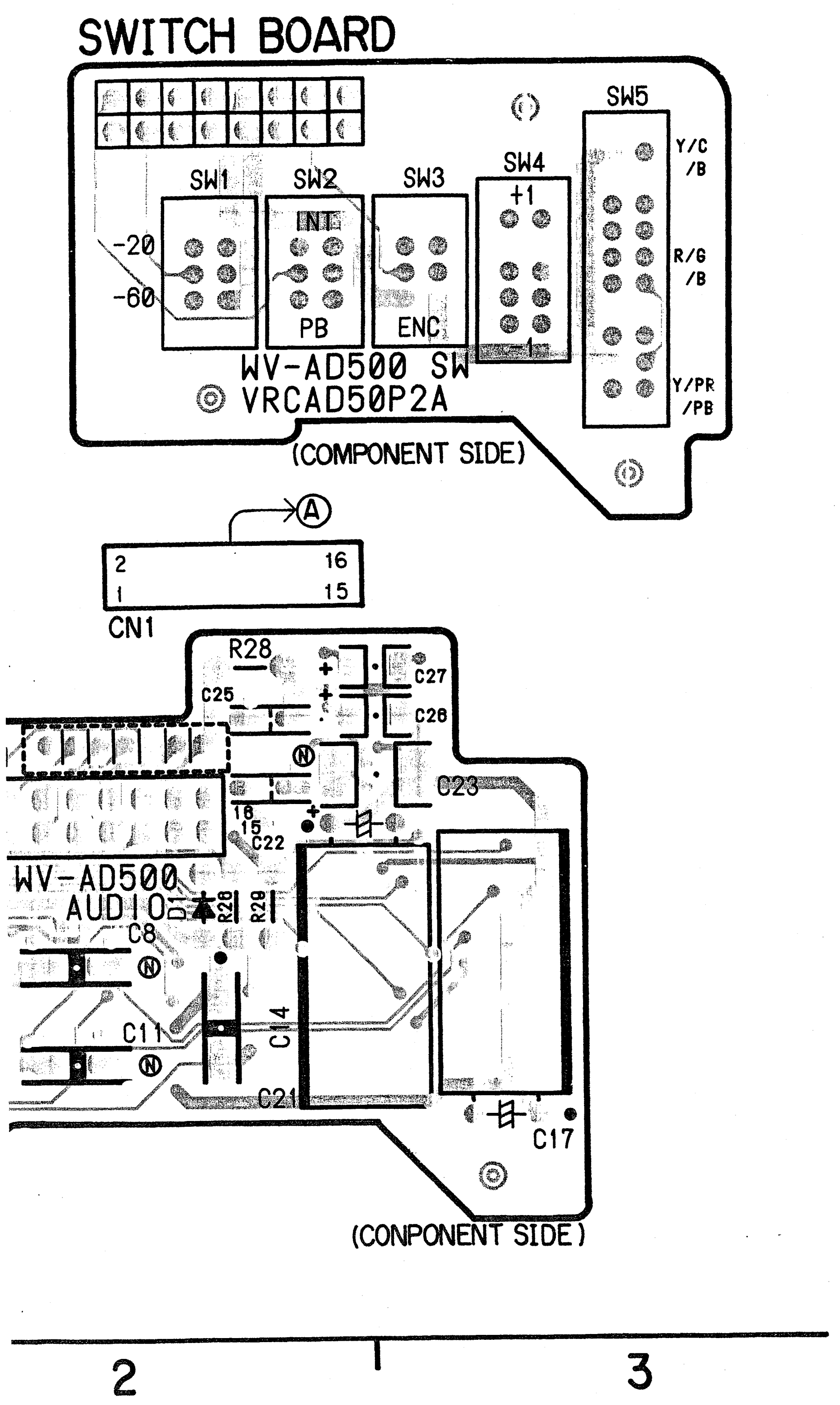
D1	A2
D2	C1

PATTERN SIDE


SWITCH BOAI
C
B
A
1
WV-
VR(
(PATTERN SIDE)
C5
C3
C16

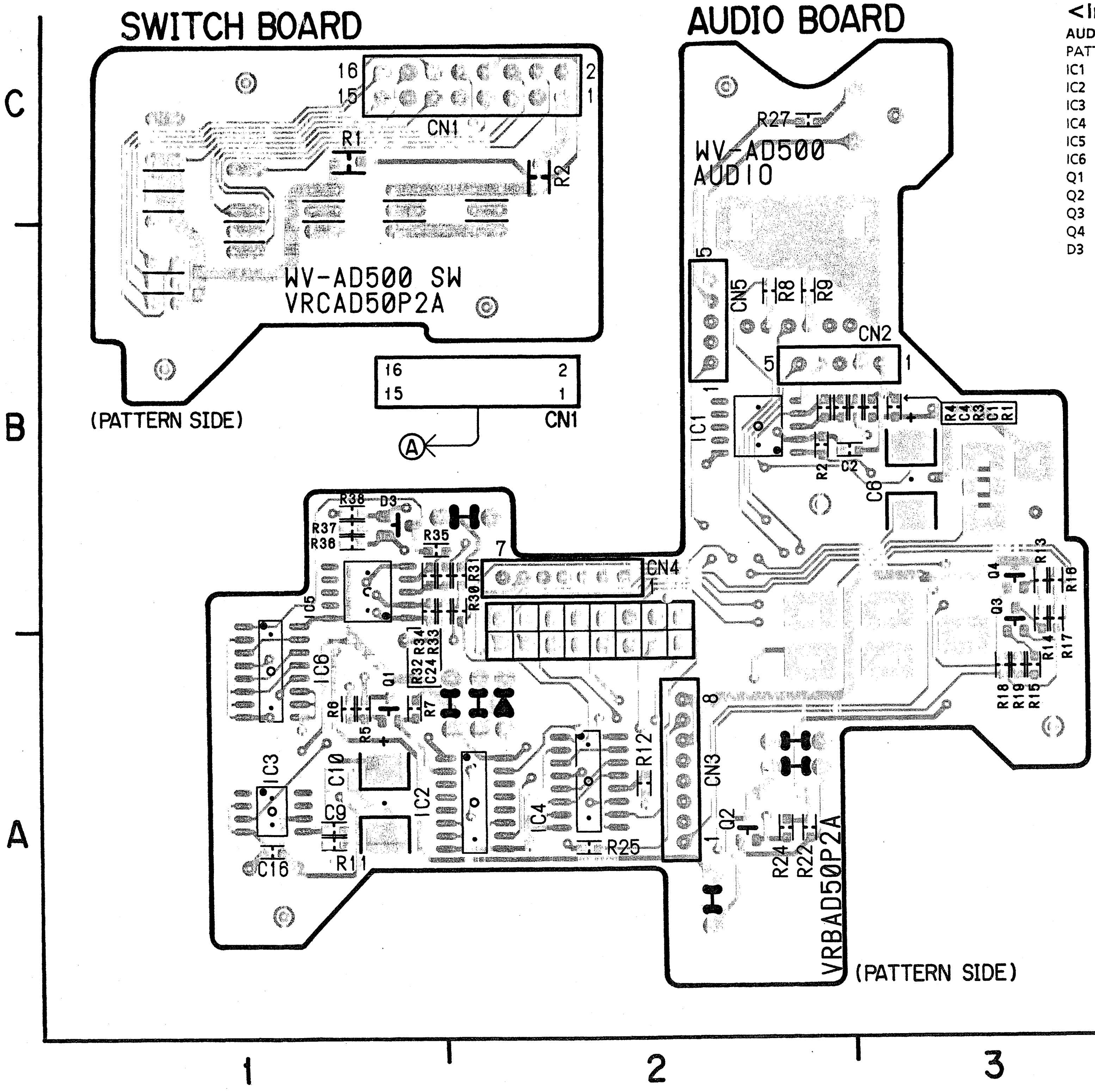
CONDUCTOR VIEW OF AUDIO BOARD (CAMERA ADAPTOR)

PATTERN SIDE


SWITCH BOARD
SW1
SW2
SW3
SW4
SW5
-20
-60
INT
PB
ENC
+1
-1
Y/C
/B
R/G
/B
Y/PR
/PB
WV-AD500 SW
VRCAD50P2A
(COMPONENT SIDE)
Ⓐ
2
16
1
15
CN1
R28
C25
C27
C26
C23
16
15
C22
WV-AD500
AUDIO
D1
R20
C8
C11
C14
C21
C17
Ⓝ
(CONPONENT SIDE)
2
3

<Index>
AUDIO BOARD
COMPONENT SIDE

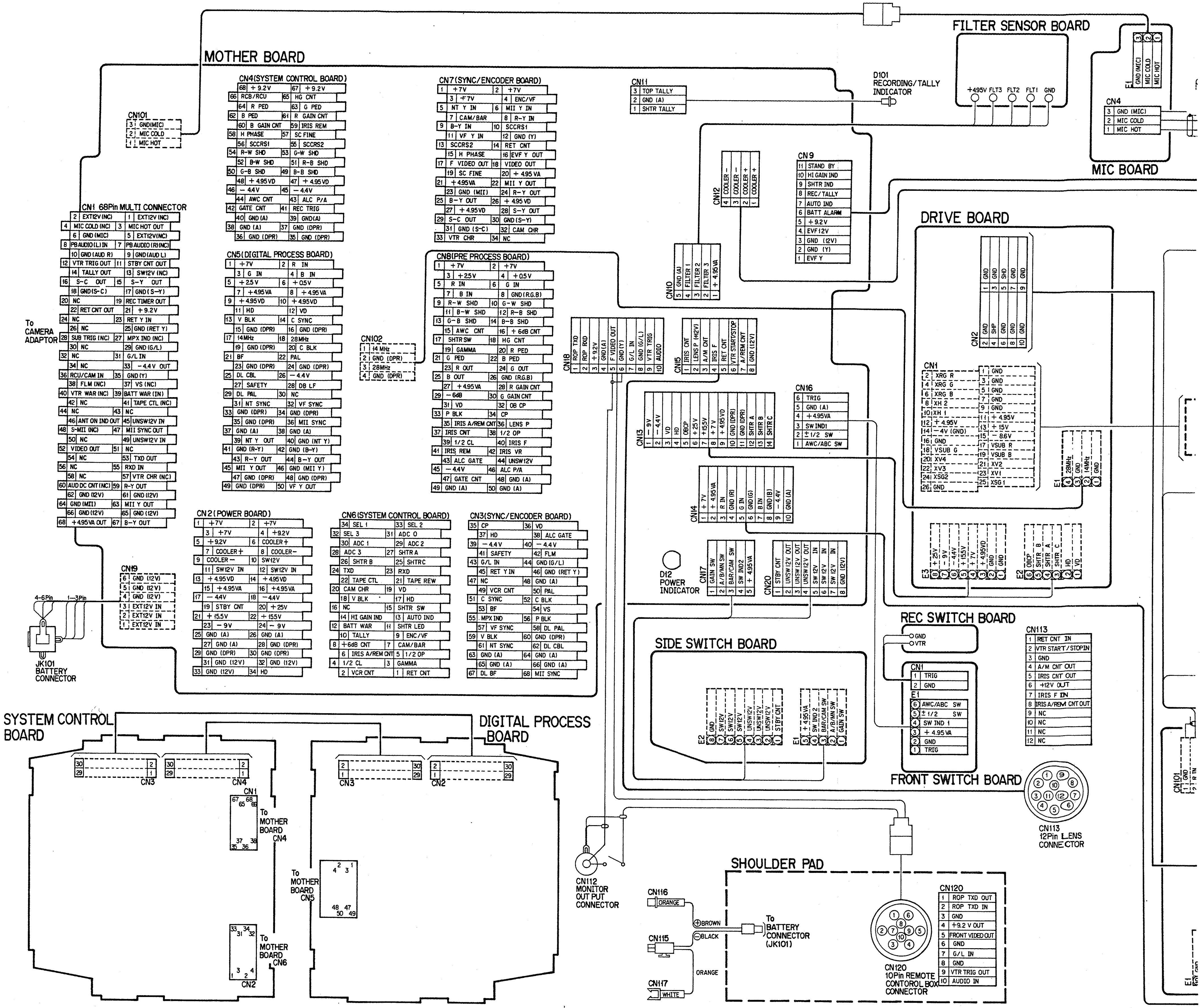
D1	A2
D2	C1


C
B
A
SWITCH BOARD
16
15
2
1
CN1
R1
R2
WV-AD500 SW
VRCAD50P2A
(PATTERN SIDE)
16
2
15
1
CN1
Ⓐ
AUDIO BOARD
R27
WV-AD500
AUDIO
CN5
5
1
R8
R9
CN2
5
1
IC1
R4
C4
R3
C1
R1
R2
C2
C6
R38
D3
R37
R36
R35
7
R31
CN4
R30
R34
R33
R32
C24
Q5
IC6
Q1
R6
R7
R5
8
R12
CN3
IC3
C10
C9
IC2
IC4
R11
C16
R25
Q2
R24
R22
1
Q4
Q3
R13
R16
R17
R14
R18
R19
R15
VRBAD50P2A
(PATTERN SIDE)
1
2
3

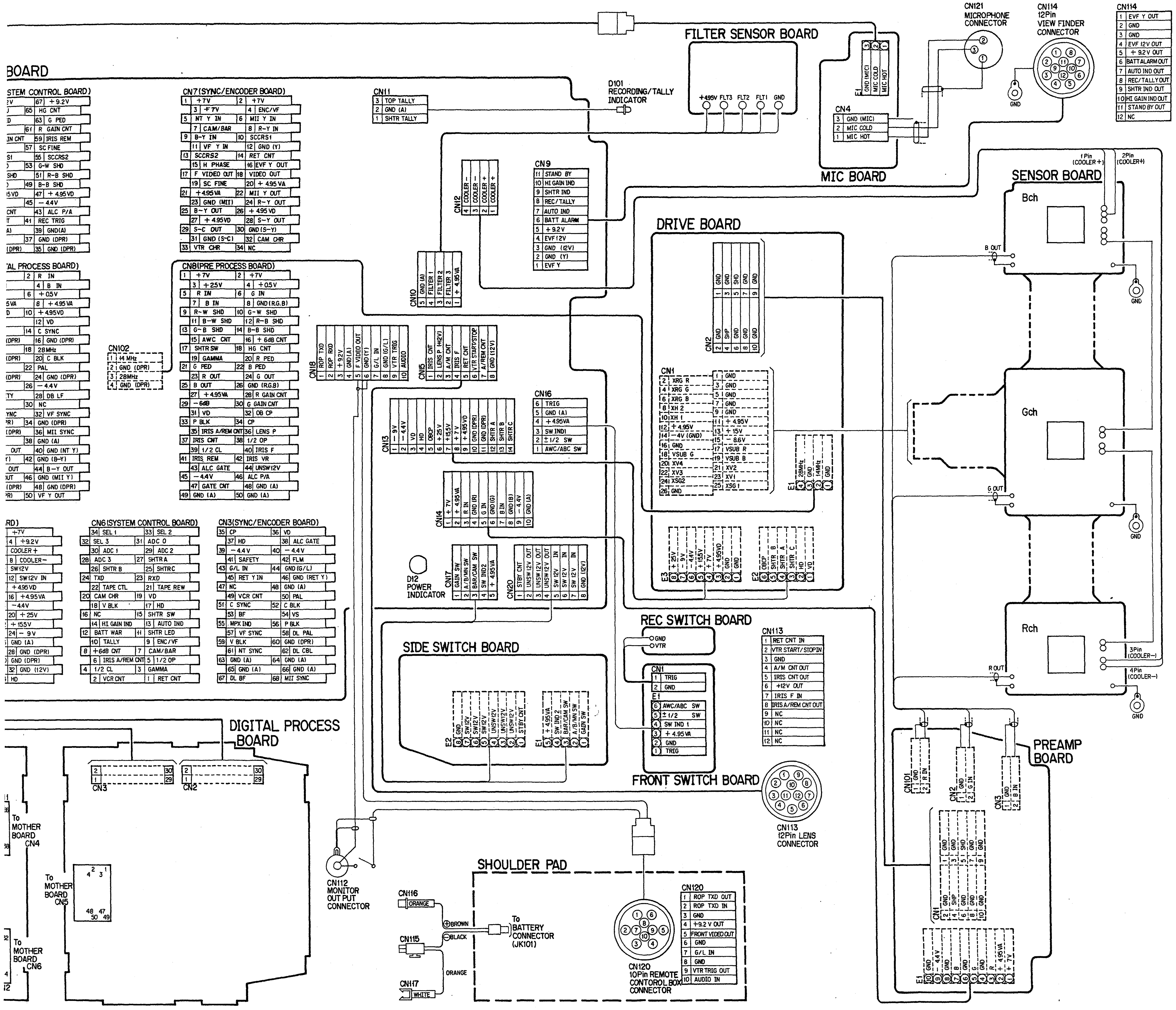
<Index>
AUDIO BOARD
PATTERN SIDE

IC1	B2
IC2	A1
IC3	A1
IC4	A2
IC5	B1
IC6	A1
Q1	A1
Q2	A2
Q3	B3
Q4	B3
D3	B1

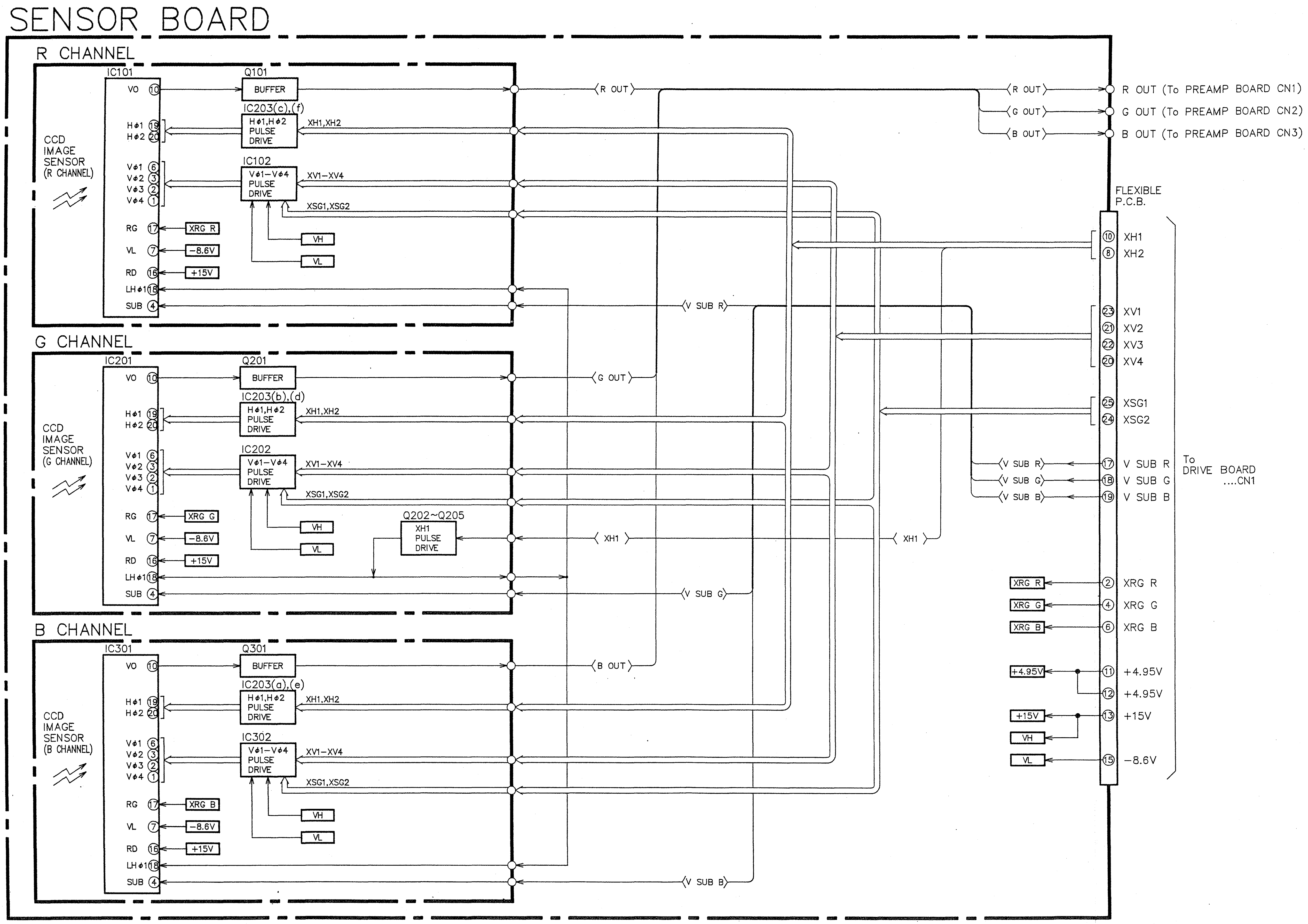
WIRING DIAGRAM


MOTHER BOARD
CN4(SYSTEM CONTROL BOARD)
CN7(SYNC/ENCODER BOARD)
CN5(DIGITAL PROCESS BOARD)
CN8(PRE PROCESS BOARD)
CN1 68Pin MULTI CONNECTOR
To CAMERA ADAPTOR
CN101
CN102
CN2(POWER BOARD)
CN6(SYSTEM CONTROL BOARD)
CN3(SYNC/ENCODER BOARD)
CN19
JK101 BATTERY CONNECTOR
4-6Pin
1-3Pin
CN11
D101 RECORDING/TALLY INDICATOR
FILTER SENSOR BOARD
MIC BOARD
CN4
CN9
CN10
CN12
CN18
CN15
CN16
CN13
CN14
CN17
CN20
D12 POWER INDICATOR
DRIVE BOARD
CN1
CN2
E1
E2
E3
REC SWITCH BOARD
SIDE SWITCH BOARD
FRONT SWITCH BOARD
CN113
CN113 12Pin LENS CONNECTOR
SYSTEM CONTROL BOARD
DIGITAL PROCESS BOARD
To MOTHER BOARD CN4
To MOTHER BOARD CN5
To MOTHER BOARD CN6
CN112 MONITOR OUT PUT CONNECTOR
SHOULDER PAD
CN116
CN115
CN117
ORANGE
BROWN
BLACK
WHITE
To BATTERY CONNECTOR (JK101)
CN120
CN120 10Pin REMOTE CONTOROL BOX CONNECTOR

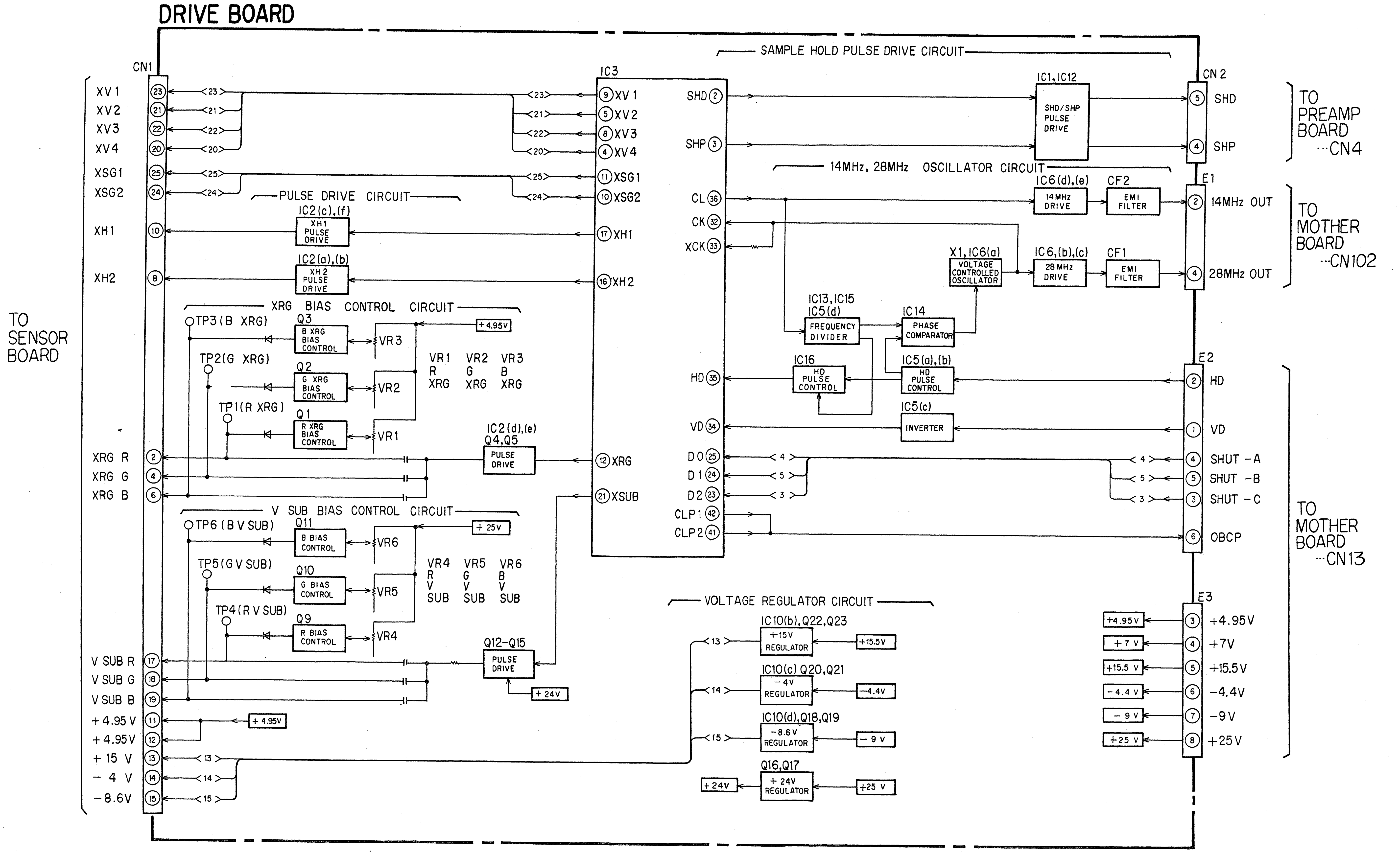
WIRING DIAGRAM


FILTER SENSOR BOARD
MIC BOARD
SENSOR BOARD
DRIVE BOARD
REC SWITCH BOARD
SIDE SWITCH BOARD
FRONT SWITCH BOARD
DIGITAL PROCESS BOARD
PREAMP BOARD
SHOULDER PAD
CN121 MICROPHONE CONNECTOR
CN114 12Pin VIEW FINDER CONNECTOR
D101 RECORDING/TALLY INDICATOR
D12 POWER INDICATOR
CN112 MONITOR OUT PUT CONNECTOR
CN113 12Pin LENS CONNECTOR
CN120 10Pin REMOTE CONTOROL BOX CONNECTOR
To BATTERY CONNECTOR (JK101)
CN7(SYNC/ENCODER BOARD)
CN8(PRE PROCESS BOARD)
CN6(SYSTEM CONTROL BOARD)
CN3(SYNC/ENCODER BOARD)
To MOTHER BOARD CN4
To MOTHER BOARD CN5
To MOTHER BOARD CN6
Bch
Gch
Rch
B OUT
G OUT
R OUT
GND
1Pin (COOLER+)
2Pin (COOLER+)
3Pin (COOLER−)
4Pin (COOLER−)
CN116 ORANGE
CN115
CN117 WHITE
BROWN
BLACK
ORANGE

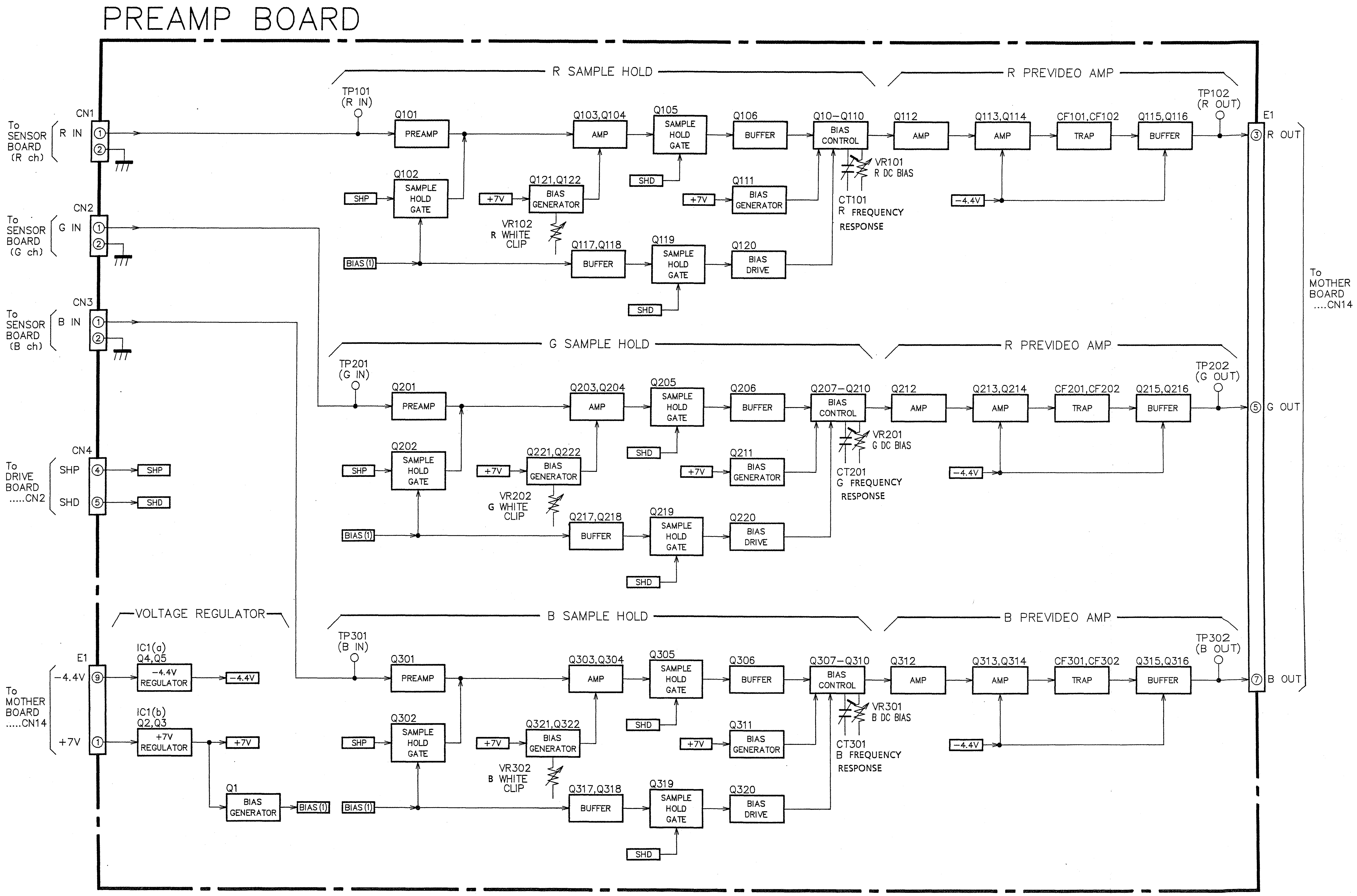
BLOCK DIAGRAM OF SENSOR BOARD


SENSOR BOARD
R CHANNEL
IC101
Q101
BUFFER
IC203(c),(f)
Hϕ1,Hϕ2 PULSE DRIVE
XH1,XH2
IC102
Vϕ1−Vϕ4 PULSE DRIVE
XV1−XV4
XSG1,XSG2
VH
VL
CCD IMAGE SENSOR (R CHANNEL)
VO ⑩
Hϕ1 ⑲
Hϕ2 ⑳
Vϕ1 ⑥
Vϕ2 ③
Vϕ3 ②
Vϕ4 ①
RG ⑰
VL ⑦
RD ⑯
LHϕ1⑱
SUB ④
XRG R
−8.6V
+15V
R OUT
V SUB R
G CHANNEL
IC201
Q201
BUFFER
IC203(b),(d)
Hϕ1,Hϕ2 PULSE DRIVE
XH1,XH2
IC202
Vϕ1−Vϕ4 PULSE DRIVE
XV1−XV4
XSG1,XSG2
CCD IMAGE SENSOR (G CHANNEL)
XRG G
−8.6V
+15V
VH
VL
Q202~Q205
XH1 PULSE DRIVE
XH1
G OUT
V SUB G
B CHANNEL
IC301
Q301
BUFFER
IC203(a),(e)
Hϕ1,Hϕ2 PULSE DRIVE
XH1,XH2
IC302
Vϕ1−Vϕ4 PULSE DRIVE
XV1−XV4
XSG1,XSG2
CCD IMAGE SENSOR (B CHANNEL)
XRG B
−8.6V
+15V
VH
VL
B OUT
V SUB B
R OUT
G OUT
B OUT
R OUT (To PREAMP BOARD CN1)
G OUT (To PREAMP BOARD CN2)
B OUT (To PREAMP BOARD CN3)
FLEXIBLE P.C.B.
⑩ XH1
⑧ XH2
㉓ XV1
㉑ XV2
㉒ XV3
⑳ XV4
㉕ XSG1
㉔ XSG2
V SUB R
V SUB G
V SUB B
⑰ V SUB R
⑱ V SUB G
⑲ V SUB B
To DRIVE BOARD CN1
XH1
XRG R
XRG G
XRG B
② XRG R
④ XRG G
⑥ XRG B
+4.95V
⑪ +4.95V
⑫ +4.95V
+15V
⑬ +15V
VH
VL
⑮ −8.6V

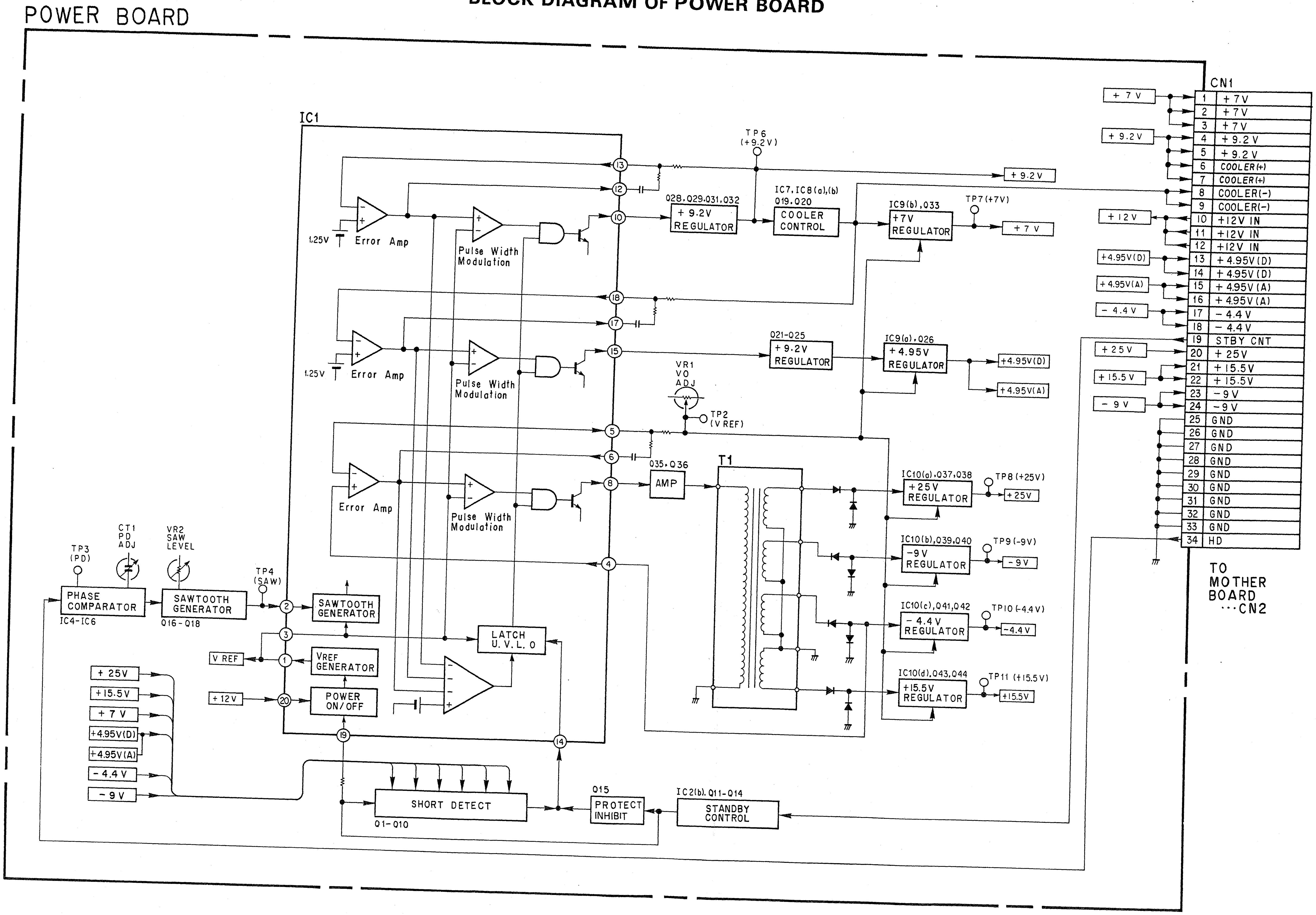
BLOCK DIAGRAM OF DRIVE BOARD


DRIVE BOARD
CN1
TO SENSOR BOARD
XV1
XV2
XV3
XV4
XSG1
XSG2
XH1
XH2
XRG R
XRG G
XRG B
V SUB R
V SUB G
V SUB B
+4.95 V
+4.95V
+ 15 V
− 4 V
−8.6V
PULSE DRIVE CIRCUIT
IC2(c),(f)
XH1 PULSE DRIVE
IC2(a),(b)
XH2 PULSE DRIVE
XRG BIAS CONTROL CIRCUIT
TP3(B XRG)
TP2(G XRG)
TP1(R XRG)
Q3
B XRG BIAS CONTROL
Q2
G XRG BIAS CONTROL
Q1
R XRG BIAS CONTROL
VR3
VR2
VR1
+4.95V
VR1 R XRG
VR2 G XRG
VR3 B XRG
IC2(d),(e) Q4,Q5
PULSE DRIVE
V SUB BIAS CONTROL CIRCUIT
TP6(B V SUB)
TP5(G V SUB)
TP4(R V SUB)
Q11
B BIAS CONTROL
Q10
G BIAS CONTROL
Q9
R BIAS CONTROL
VR6
VR5
VR4
+ 25V
VR4 R V SUB
VR5 G V SUB
VR6 B V SUB
Q12–Q15
PULSE DRIVE
+ 24V
IC3
XV1
XV2
XV3
XV4
XSG1
XSG2
XH1
XH2
XRG
XSUB
SHD
SHP
CL
CK
XCK
HD
VD
D0
D1
D2
CLP1
CLP2
SAMPLE HOLD PULSE DRIVE CIRCUIT
IC1, IC12
SHD/SHP PULSE DRIVE
CN2
SHD
SHP
TO PREAMP BOARD ···CN4
14MHz, 28MHz OSCILLATOR CIRCUIT
IC6(d),(e)
14MHz DRIVE
CF2
EMI FILTER
E1
14MHz OUT
X1, IC6(a)
VOLTAGE CONTROLLED OSCILLATOR
IC6,(b),(c)
28MHz DRIVE
CF1
EMI FILTER
28MHz OUT
TO MOTHER BOARD ···CN102
IC13, IC15 IC5(d)
FREQUENCY DIVIDER
IC14
PHASE COMPARATOR
IC16
HD PULSE CONTROL
IC5(a),(b)
HD PULSE CONTROL
IC5(c)
INVERTER
E2
HD
VD
SHUT −A
SHUT −B
SHUT − C
OBCP
TO MOTHER BOARD ···CN13
VOLTAGE REGULATOR CIRCUIT
IC10(b), Q22, Q23
+15V REGULATOR
+15.5V
IC10(c) Q20, Q21
−4V REGULATOR
−4.4V
IC10(d), Q18, Q19
−8.6V REGULATOR
−9 V
Q16, Q17
+ 24V REGULATOR
+24V
+25 V
E3
+4.95V
+7V
+15.5V
−4.4V
−9V
+25V

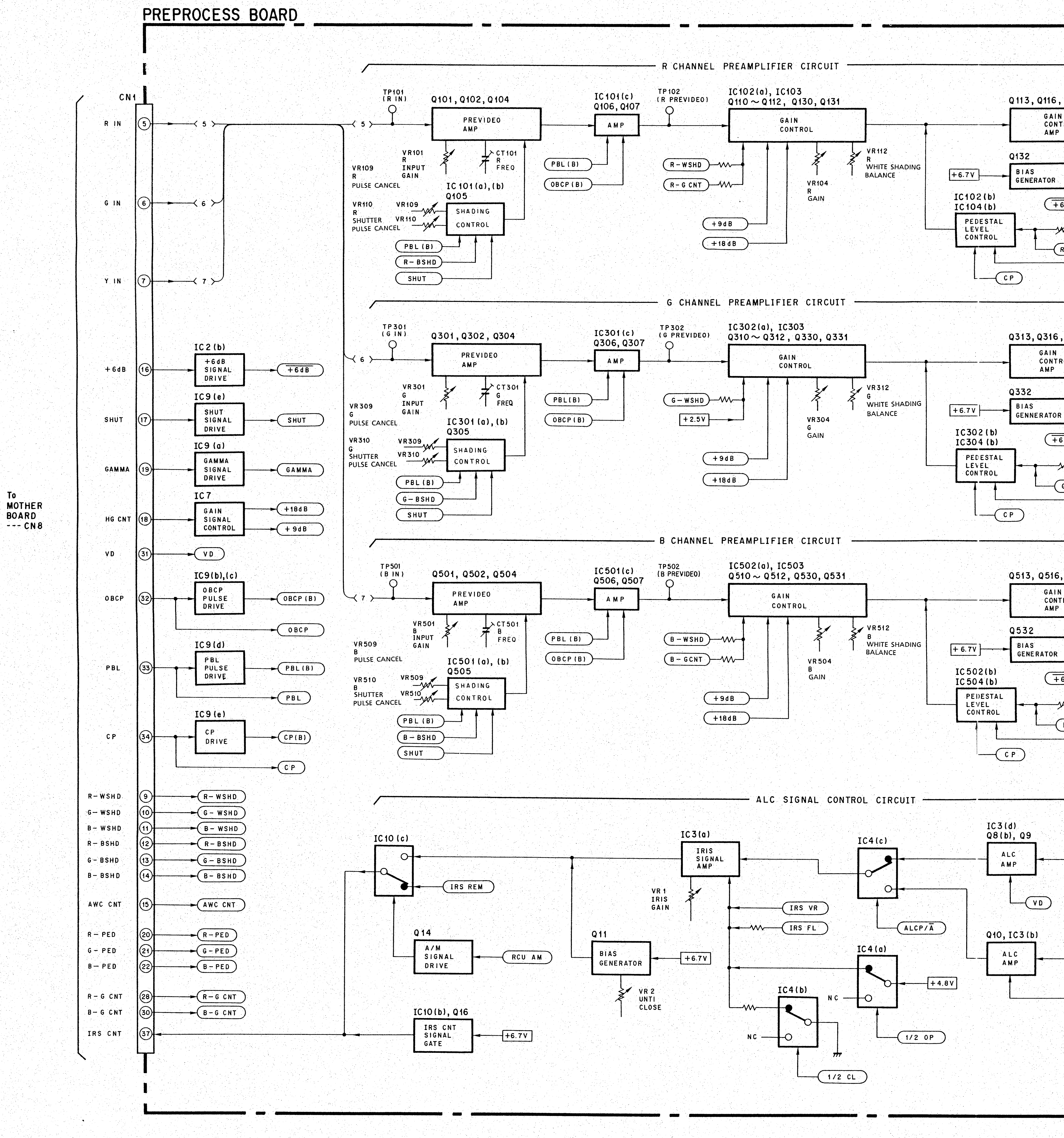
BLOCK DIAGRAM OF PREAMP BOARD


PREAMP BOARD
R SAMPLE HOLD
R PREVIDEO AMP
To SENSOR BOARD (R ch)
CN1
R IN
①
②
TP101 (R IN)
Q101 PREAMP
Q102 SAMPLE HOLD GATE
SHP
BIAS (1)
Q103,Q104 AMP
Q121,Q122 BIAS GENERATOR
+7V
VR102 R WHITE CLIP
Q105 SAMPLE HOLD GATE
SHD
Q106 BUFFER
Q10–Q110 BIAS CONTROL
Q111 BIAS GENERATOR
VR101 R DC BIAS
CT101 R FREQUENCY RESPONSE
Q117,Q118 BUFFER
Q119 SAMPLE HOLD GATE
Q120 BIAS DRIVE
Q112 AMP
Q113,Q114 AMP
CF101,CF102 TRAP
Q115,Q116 BUFFER
-4.4V
TP102 (R OUT)
E1
③ R OUT
To SENSOR BOARD (G ch)
CN2
G IN
G SAMPLE HOLD
R PREVIDEO AMP
TP201 (G IN)
Q201 PREAMP
Q202 SAMPLE HOLD GATE
Q203,Q204 AMP
Q221,Q222 BIAS GENERATOR
VR202 G WHITE CLIP
Q205 SAMPLE HOLD GATE
Q206 BUFFER
Q207–Q210 BIAS CONTROL
Q211 BIAS GENERATOR
VR201 G DC BIAS
CT201 G FREQUENCY RESPONSE
Q217,Q218 BUFFER
Q219 SAMPLE HOLD GATE
Q220 BIAS DRIVE
Q212 AMP
Q213,Q214 AMP
CF201,CF202 TRAP
Q215,Q216 BUFFER
TP202 (G OUT)
⑤ G OUT
To SENSOR BOARD (B ch)
CN3
B IN
To DRIVE BOARD CN2
CN4
SHP ④
SHD ⑤
To MOTHER BOARD CN14
VOLTAGE REGULATOR
E1
-4.4V ⑨
+7V ①
To MOTHER BOARD CN14
IC1(a) Q4,Q5 -4.4V REGULATOR
IC1(b) Q2,Q3 +7V REGULATOR
Q1 BIAS GENERATOR
B SAMPLE HOLD
B PREVIDEO AMP
TP301 (B IN)
Q301 PREAMP
Q302 SAMPLE HOLD GATE
Q303,Q304 AMP
Q321,Q322 BIAS GENERATOR
VR302 B WHITE CLIP
Q305 SAMPLE HOLD GATE
Q306 BUFFER
Q307–Q310 BIAS CONTROL
Q311 BIAS GENERATOR
VR301 B DC BIAS
CT301 B FREQUENCY RESPONSE
Q317,Q318 BUFFER
Q319 SAMPLE HOLD GATE
Q320 BIAS DRIVE
Q312 AMP
Q313,Q314 AMP
CF301,CF302 TRAP
Q315,Q316 BUFFER
TP302 (B OUT)
⑦ B OUT

BLOCK DIAGRAM OF POWER BOARD

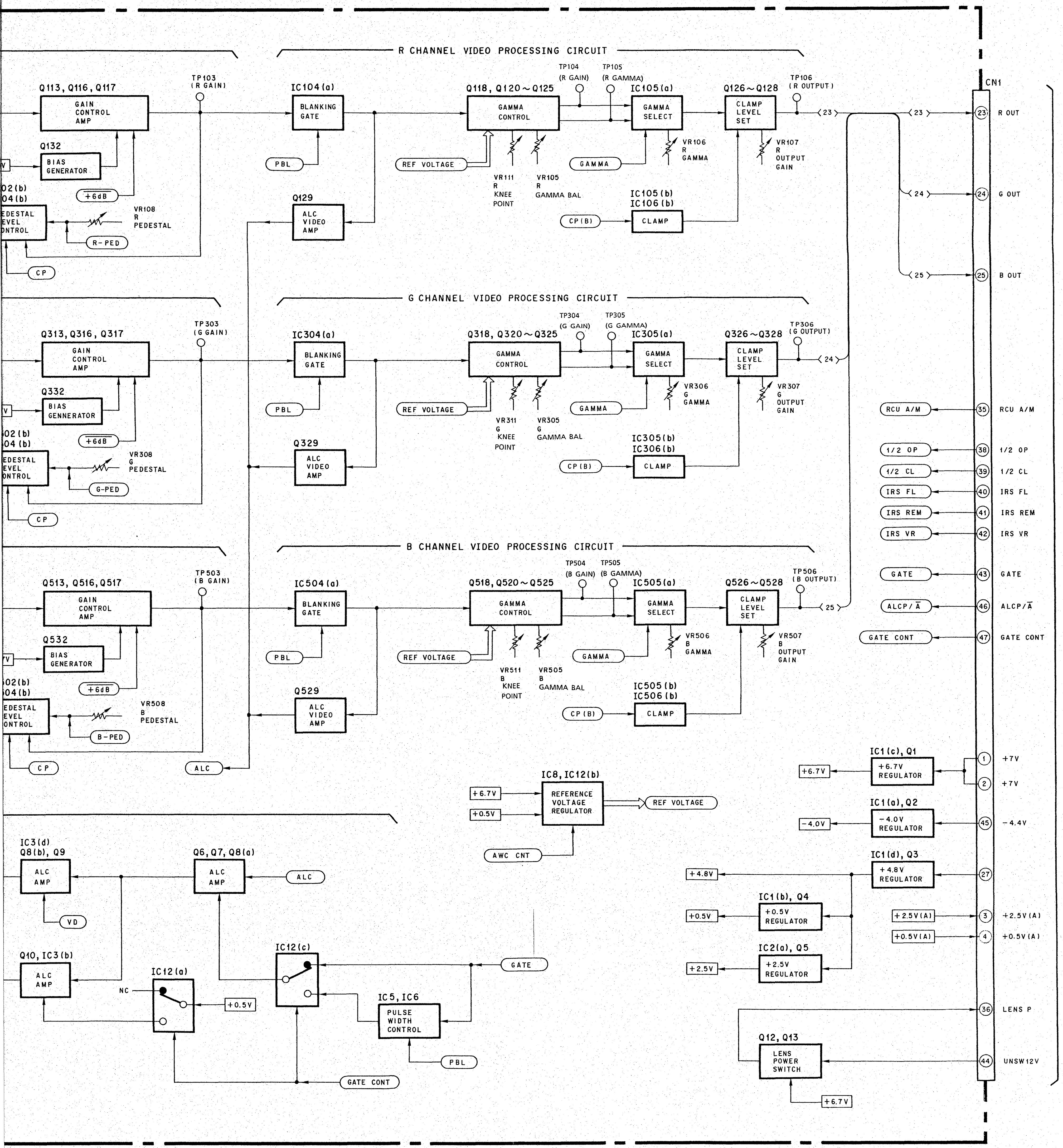

POWER BOARD
IC1
TP6 (+9.2V)
+9.2V
028,029,031,032
+9.2V REGULATOR
IC7,IC8(a),(b) 019,020
COOLER CONTROL
IC9(b),033
+7V REGULATOR
TP7 (+7V)
+7V
1.25V
Error Amp
Pulse Width Modulation
021-025
+9.2V REGULATOR
IC9(a),026
+4.95V REGULATOR
+4.95V(D)
+4.95V(A)
VR1 VO ADJ
TP2 (V REF)
Q35,Q36
AMP
T1
IC10(a),037,038
+25V REGULATOR
TP8 (+25V)
+25V
IC10(b),039,040
-9V REGULATOR
TP9 (-9V)
-9V
IC10(c),041,042
-4.4V REGULATOR
TP10 (-4.4V)
-4.4V
IC10(d),043,044
+15.5V REGULATOR
TP11 (+15.5V)
+15.5V
TP3 (PD)
CT1 PD ADJ
VR2 SAW LEVEL
TP4 (SAW)
PHASE COMPARATOR
IC4-IC6
SAWTOOTH GENERATOR
Q16-Q18
SAWTOOTH GENERATOR
LATCH U.V.L.O
V REF
VREF GENERATOR
+12V
POWER ON/OFF
+25V
+15.5V
+7V
+4.95V(D)
+4.95V(A)
-4.4V
-9V
SHORT DETECT
Q1-Q10
Q15
PROTECT INHIBIT
IC2(b),Q11-Q14
STANDBY CONTROL
CN1
1 +7V
2 +7V
3 +7V
4 +9.2V
5 +9.2V
6 COOLER(+)
7 COOLER(+)
8 COOLER(-)
9 COOLER(-)
10 +12V IN
11 +12V IN
12 +12V IN
13 +4.95V(D)
14 +4.95V(D)
15 +4.95V(A)
16 +4.95V(A)
17 -4.4V
18 -4.4V
19 STBY CNT
20 +25V
21 +15.5V
22 +15.5V
23 -9V
24 -9V
25 GND
26 GND
27 GND
28 GND
29 GND
30 GND
31 GND
32 GND
33 GND
34 HD
TO MOTHER BOARD ···CN2

BLOCK DIAGRAM OF PREP

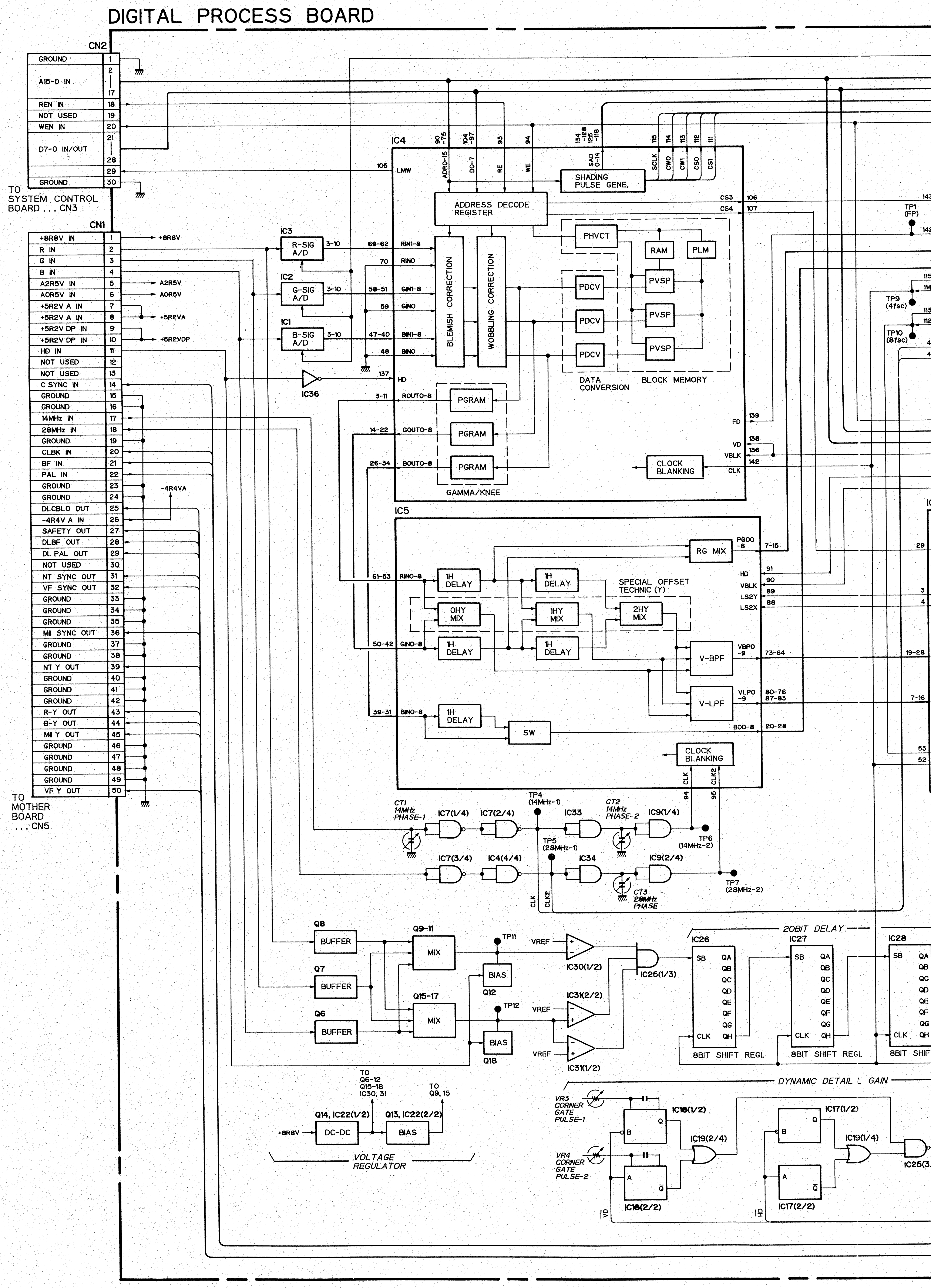


PREPROCESS BOARD
To MOTHER BOARD --- CN8
CN1
R IN
G IN
Y IN
+6dB
SHUT
GAMMA
HG CNT
VD
OBCP
PBL
CP
R-WSHD
G-WSHD
B-WSHD
R-BSHD
G-BSHD
B-BSHD
AWC CNT
R-PED
G-PED
B-PED
R-G CNT
B-G CNT
IRS CNT
IC2(b)
+6dB SIGNAL DRIVE
IC9(e)
SHUT SIGNAL DRIVE
IC9(a)
GAMMA SIGNAL DRIVE
IC7
GAIN SIGNAL CONTROL
+18dB
+9dB
IC9(b),(c)
OBCP PULSE DRIVE
OBCP(B)
IC9(d)
PBL PULSE DRIVE
PBL(B)
CP DRIVE
CP(B)
R CHANNEL PREAMPLIFIER CIRCUIT
TP101 (R IN)
Q101, Q102, Q104
PREVIDEO AMP
VR101 R INPUT GAIN
CT101 R FREQ
VR109 R PULSE CANCEL
VR110 R SHUTTER PULSE CANCEL
IC101(a),(b) Q105
SHADING CONTROL
IC101(c) Q106, Q107
AMP
TP102 (R PREVIDEO)
IC102(a), IC103 Q110~Q112, Q130, Q131
GAIN CONTROL
VR104 R GAIN
VR112 R WHITE SHADING BALANCE
Q113, Q116,
GAIN CONT AMP
Q132
BIAS GENERATOR
+6.7V
IC102(b) IC104(b)
PEDESTAL LEVEL CONTROL
G CHANNEL PREAMPLIFIER CIRCUIT
TP301 (G IN)
Q301, Q302, Q304
VR301 G INPUT GAIN
CT301 G FREQ
VR309 G PULSE CANCEL
VR310 G SHUTTER PULSE CANCEL
IC301(a),(b) Q305
IC301(c) Q306, Q307
TP302 (G PREVIDEO)
IC302(a), IC303 Q310~Q312, Q330, Q331
+2.5V
VR304 G GAIN
VR312 G WHITE SHADING BALANCE
Q313, Q316,
Q332
IC302(b) IC304(b)
B CHANNEL PREAMPLIFIER CIRCUIT
TP501 (B IN)
Q501, Q502, Q504
VR501 B INPUT GAIN
CT501 B FREQ
VR509 B PULSE CANCEL
VR510 B SHUTTER PULSE CANCEL
IC501(a),(b) Q505
IC501(c) Q506, Q507
TP502 (B PREVIDEO)
IC502(a), IC503 Q510~Q512, Q530, Q531
VR504 B GAIN
VR512 B WHITE SHADING BALANCE
Q513, Q516,
Q532
IC502(b) IC504(b)
ALC SIGNAL CONTROL CIRCUIT
IC10(c)
IRS REM
Q14
A/M SIGNAL DRIVE
RCU AM
IC10(b), Q16
IRS CNT SIGNAL GATE
Q11
BIAS GENERATOR
VR2 UNTI CLOSE
IC3(a)
IRIS SIGNAL AMP
VR1 IRIS GAIN
IRS VR
IRS FL
IC4(c)
IC4(a)
IC4(b)
NC
+4.8V
1/2 OP
1/2 CL
ALCP/Ā
IC3(d) Q8(b), Q9
ALC AMP
VD
Q10, IC3(b)

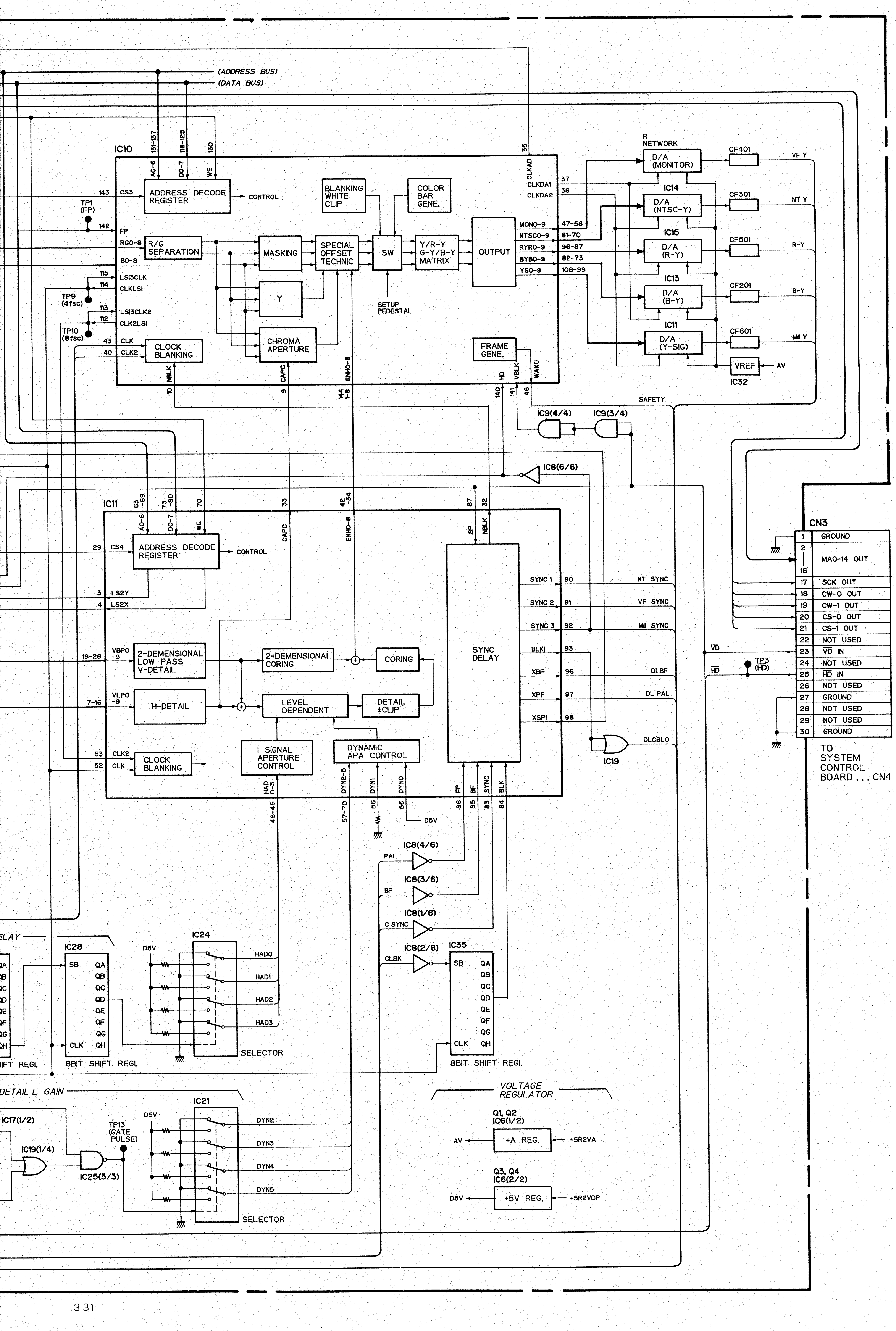
OF PREPROCESS BOARD


R CHANNEL VIDEO PROCESSING CIRCUIT
G CHANNEL VIDEO PROCESSING CIRCUIT
B CHANNEL VIDEO PROCESSING CIRCUIT
Q113, Q116, Q117
GAIN CONTROL AMP
Q132
BIAS GENERATOR
+6dB
02(b)
04(b)
EDESTAL
EVEL
ONTROL
VR108 R PEDESTAL
R-PED
CP
TP103 (R GAIN)
IC104(a)
BLANKING GATE
PBL
Q129
ALC VIDEO AMP
Q118, Q120~Q125
GAMMA CONTROL
REF VOLTAGE
VR111 R KNEE POINT
VR105 R GAMMA BAL
TP104 (R GAIN)
TP105 (R GAMMA)
IC105(a)
GAMMA SELECT
GAMMA
VR106 R GAMMA
IC105(b)
IC106(b)
CLAMP
CP(B)
Q126~Q128
CLAMP LEVEL SET
VR107 R OUTPUT GAIN
TP106 (R OUTPUT)
23
24
25
Q313, Q316, Q317
Q332
BIAS GENNERATOR
VR308 G PEDESTAL
G-PED
TP303 (G GAIN)
IC304(a)
Q329
Q318, Q320~Q325
VR311 G KNEE POINT
VR305 G GAMMA BAL
TP304 (G GAIN)
TP305 (G GAMMA)
IC305(a)
VR306 G GAMMA
IC305(b)
IC306(b)
Q326~Q328
VR307 G OUTPUT GAIN
TP306 (G OUTPUT)
Q513, Q516, Q517
Q532
VR508 B PEDESTAL
B-PED
TP503 (B GAIN)
IC504(a)
Q529
Q518, Q520~Q525
VR511 B KNEE POINT
VR505 B GAMMA BAL
TP504 (B GAIN)
TP505 (B GAMMA)
IC505(a)
VR506 B GAMMA
IC505(b)
IC506(b)
Q526~Q528
VR507 B OUTPUT GAIN
TP506 (B OUTPUT)
ALC
IC3(d)
Q8(b), Q9
ALC AMP
VD
Q6, Q7, Q8(a)
Q10, IC3(b)
IC12(a)
NC
+0.5V
IC12(c)
IC5, IC6
PULSE WIDTH CONTROL
GATE
GATE CONT
IC8, IC12(b)
REFERENCE VOLTAGE REGULATOR
+6.7V
+0.5V
AWC CNT
IC1(c), Q1
+6.7V REGULATOR
IC1(a), Q2
-4.0V REGULATOR
-4.0V
IC1(d), Q3
+4.8V REGULATOR
+4.8V
IC1(b), Q4
+0.5V REGULATOR
IC2(a), Q5
+2.5V REGULATOR
+2.5V
+2.5V(A)
+0.5V(A)
Q12, Q13
LENS POWER SWITCH
RCU A/M
1/2 OP
1/2 CL
IRS FL
IRS REM
IRS VR
ALCP/$\overline{A}$
CN1
23 R OUT
24 G OUT
25 B OUT
35 RCU A/M
38 1/2 OP
39 1/2 CL
40 IRS FL
41 IRS REM
42 IRS VR
43 GATE
46 ALCP/$\overline{A}$
47 GATE CONT
1 +7V
2 +7V
45 -4.4V
27
3 +2.5V(A)
4 +0.5V(A)
36 LENS P
44 UNSW12V
To MOTHER BOARD --- CN8

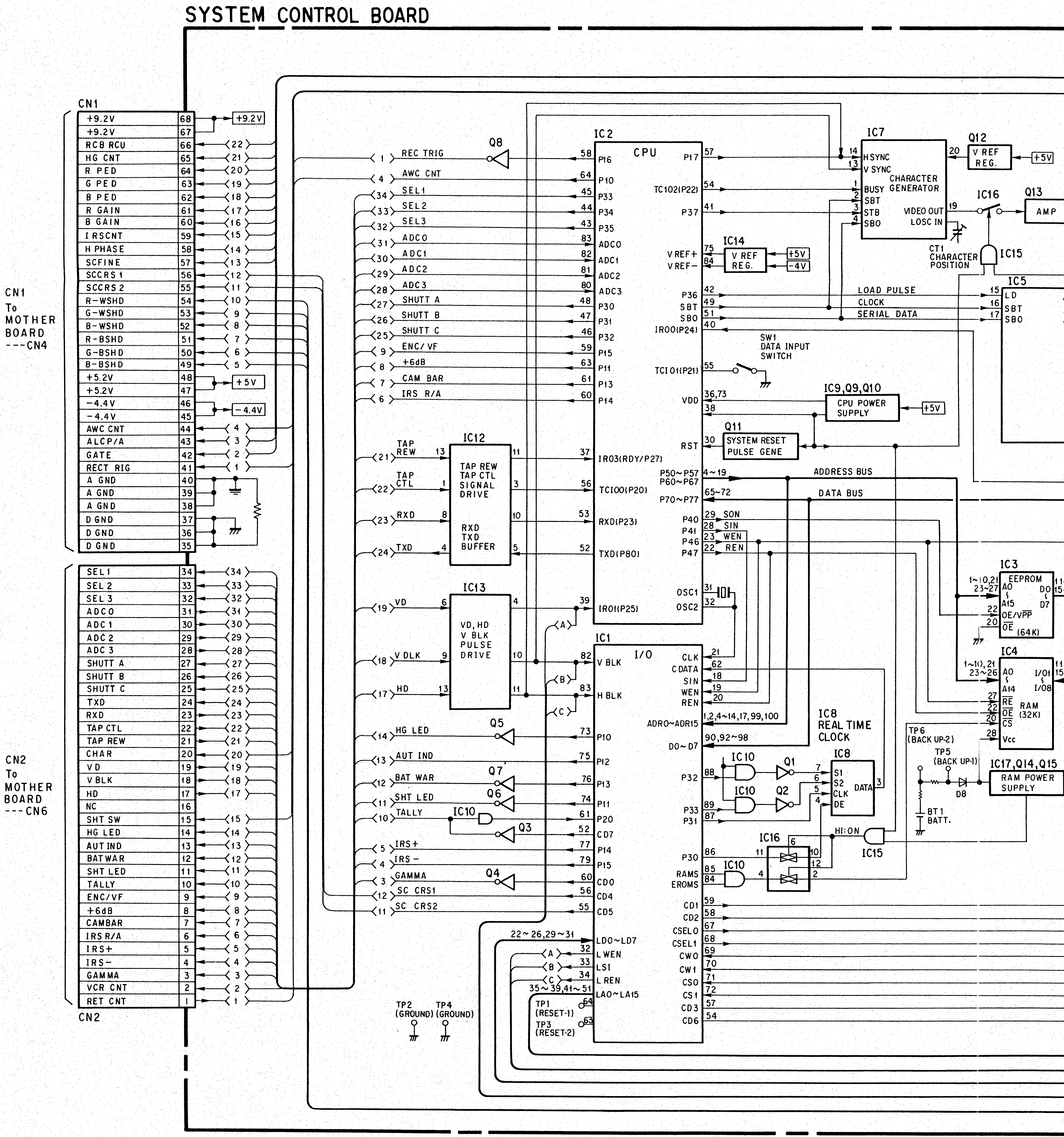
BLOCK DIAGRAM OF DIGITAL


DIGITAL PROCESS BOARD
CN2
GROUND 1
A15-0 IN 2-17
REN IN 18
NOT USED 19
WEN IN 20
D7-0 IN/OUT 21-28
29
GROUND 30
TO SYSTEM CONTROL BOARD . . . CN3
CN1
+8R8V IN 1
R IN 2
G IN 3
B IN 4
A2R5V IN 5
A0R5V IN 6
+5R2V A IN 7
+5R2V A IN 8
+5R2V DP IN 9
+5R2V DP IN 10
HD IN 11
NOT USED 12
NOT USED 13
C SYNC IN 14
GROUND 15
GROUND 16
14MHz IN 17
28MHz IN 18
GROUND 19
CLBK IN 20
BF IN 21
PAL IN 22
GROUND 23
GROUND 24
DLCBLO OUT 25
-4R4V A IN 26
SAFETY OUT 27
DLBF OUT 28
DL PAL OUT 29
NOT USED 30
NT SYNC OUT 31
VF SYNC OUT 32
GROUND 33
GROUND 34
GROUND 35
MII SYNC OUT 36
GROUND 37
GROUND 38
NT Y OUT 39
GROUND 40
GROUND 41
GROUND 42
R-Y OUT 43
B-Y OUT 44
MII Y OUT 45
GROUND 46
GROUND 47
GROUND 48
GROUND 49
VF Y OUT 50
TO MOTHER BOARD . . . CN5
+8R8V
A2R5V
A0R5V
+5R2VA
+5R2VDP
-4R4VA
IC3 R-SIG A/D 3-10
IC2 G-SIG A/D 3-10
IC1 B-SIG A/D 3-10
IC36
IC4
LMW 105
ADR0-15 90-75
D0-7 104-97
RE 93
WE 94
SAD 0-14 134-128 125-118
SHADING PULSE GENE.
SCLK 115
CW0 114
CW1 113
CS0 112
CS1 111
ADDRESS DECODE REGISTER
CS3 106
CS4 107
RIN1-8 69-62
RIN0 70
GIN1-8 58-51
GIN0 59
BIN1-8 47-40
BIN0 48
HD 137
BLEMISH CORRECTION
WOBBLING CORRECTION
PHVCT
RAM
PLM
PDCV
PVSP
DATA CONVERSION
BLOCK MEMORY
ROUT0-8 3-11
GOUT0-8 14-22
BOUT0-8 26-34
PGRAM
GAMMA/KNEE
FD 139
VD 138
VBLK 136
CLK 142
CLOCK BLANKING
TP1 (FP)
143
TP9 (4fsc)
TP10 (8fsc)
IC5
RIN0-8 61-53
GIN0-8 50-42
BIN0-8 39-31
1H DELAY
0HY MIX
1HY MIX
2HY MIX
SPECIAL OFFSET TECHNIC (Y)
RG MIX
PG00-8 7-15
HD 91
VBLK 90
LS2Y 89
LS2X 88
V-BPF
VBP0-9 73-64
V-LPF
VLP0-9 80-76 87-83
SW
B00-8 20-28
CLK 94
CLK2 95
29
3
4
19-28
7-16
53
52
CT1 14MHz PHASE-1
IC7(1/4)
IC7(2/4)
TP4 (14MHz-1)
IC33
CT2 14MHz PHASE-2
IC9(1/4)
TP6 (14MHz-2)
TP5 (28MHz-1)
IC7(3/4)
IC4(4/4)
IC34
IC9(2/4)
TP7 (28MHz-2)
CT3 28MHz PHASE
CLK
CLK2
Q8 BUFFER
Q7 BUFFER
Q6 BUFFER
Q9-11 MIX
Q15-17 MIX
TP11
TP12
Q12 BIAS
Q18 BIAS
VREF
IC30(1/2)
IC31(2/2)
IC31(1/2)
IC25(1/3)
20BIT DELAY
IC26
IC27
IC28
SB QA QB QC QD QE QF QG QH CLK
8BIT SHIFT REGI.
TO Q6-12 Q15-18 IC30, 31
TO Q9, 15
Q14, IC22(1/2)
Q13, IC22(2/2)
+8R8V
DC-DC
BIAS
VOLTAGE REGULATOR
DYNAMIC DETAIL L GAIN
VR3 CORNER GATE PULSE-1
VR4 CORNER GATE PULSE-2
IC18(1/2)
IC18(2/2)
IC19(2/4)
IC17(1/2)
IC17(2/2)
IC19(1/4)
IC25(3
VD
HD
A B Q Q̄

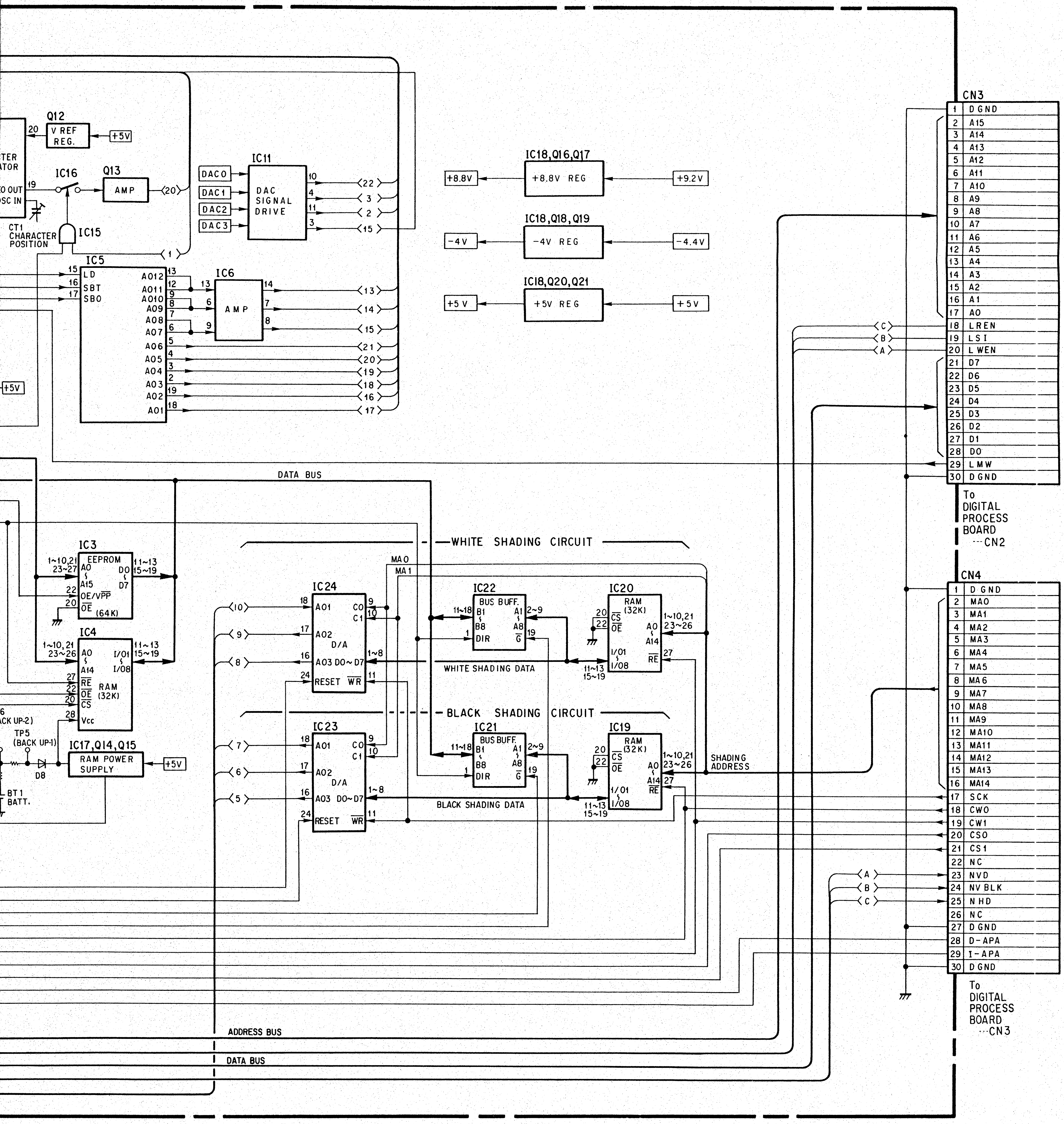
F DIGITAL PROCESS BOARD


(ADDRESS BUS)
(DATA BUS)
IC10
131-137
118-125
130
A0-6
D0-7
WE
143 CS3
ADDRESS DECODE REGISTER
CONTROL
TP1 (FP)
142 FP
RG0-8
B0-8
R/G SEPARATION
MASKING
SPECIAL OFFSET TECHNIC
SW
Y/R-Y G-Y/B-Y MATRIX
OUTPUT
BLANKING WHITE CLIP
COLOR BAR GENE.
SETUP PEDESTAL
Y
CHROMA APERTURE
115 LSI3CLK
114 CLKLSI
TP9 (4fsc)
113 LSI3CLK2
112 CLK2LSI
TP10 (8fsc)
43 CLK
40 CLK2
CLOCK BLANKING
10 NBLK
9 CAPC
144 1-8 ENHO-8
FRAME GENE.
140 HD
141 VBLK
46 WAKU
35 CLKAD
37 CLKDA1
36 CLKDA2
MONO-9 47-56
NTSC0-9 61-70
RYR0-9 96-87
BYB0-9 82-73
YG0-9 108-99
R NETWORK
D/A (MONITOR)
IC14
D/A (NTSC-Y)
IC15
D/A (R-Y)
IC13
D/A (B-Y)
IC11
D/A (Y-SIG)
CF401 VF Y
CF301 NT Y
CF501 R-Y
CF201 B-Y
CF601 MII Y
VREF AV
IC32
SAFETY
IC9(4/4)
IC9(3/4)
IC8(6/6)
IC11
63 -69 A0-6
73 -80 D0-7
70 WE
33 CAPC
42 -34 ENHO-8
87 SP
32 NBLK
29 CS4
ADDRESS DECODE REGISTER
CONTROL
3 LS2Y
4 LS2X
19-28 VBP0 -9
2-DEMENSIONAL LOW PASS V-DETAIL
2-DEMENSIONAL CORING
CORING
7-16 VLP0 -9
H-DETAIL
LEVEL DEPENDENT
DETAIL ±CLIP
53 CLK2
52 CLK
CLOCK BLANKING
I SIGNAL APERTURE CONTROL
DYNAMIC APA CONTROL
HAD 0-3 48-45
DYN2-5 57-70
DYN1 56
DYN0 55
D5V
SYNC DELAY
SYNC 1 90 NT SYNC
SYNC 2 91 VF SYNC
SYNC 3 92 MII SYNC
BLKI 93
XBF 96 DLBF
XPF 97 DL PAL
XSP1 98
DLCBLO
IC19
FP 86
BF 85
SYNC 83
BLK 84
IC8(4/6) PAL
IC8(3/6) BF
IC8(1/6) C SYNC
IC8(2/6) CLBK
IC35
SB QA QB QC QD QE QF QG QH CLK
8BIT SHIFT REGI.
CN3
1 GROUND
2
16 MA0-14 OUT
17 SCK OUT
18 CW-0 OUT
19 CW-1 OUT
20 CS-0 OUT
21 CS-1 OUT
22 NOT USED
23 VD IN
24 NOT USED
25 HD IN
26 NOT USED
27 GROUND
28 NOT USED
29 NOT USED
30 GROUND
VD
HD
TP3 (HD)
TO SYSTEM CONTROL BOARD . . . CN4
ELAY
IC28
SB QA QB QC QD QE QF QG QH CLK
IFT REGI.
8BIT SHIFT REGI.
IC24
D5V
HAD0
HAD1
HAD2
HAD3
SELECTOR
DETAIL L GAIN
IC21
D5V
DYN2
DYN3
DYN4
DYN5
SELECTOR
IC17(1/2)
IC19(1/4)
IC25(3/3)
TP13 (GATE PULSE)
VOLTAGE REGULATOR
Q1, Q2 IC6(1/2)
AV
+A REG.
+5R2VA
Q3, Q4 IC6(2/2)
D5V
+5V REG.
+5R2VDP

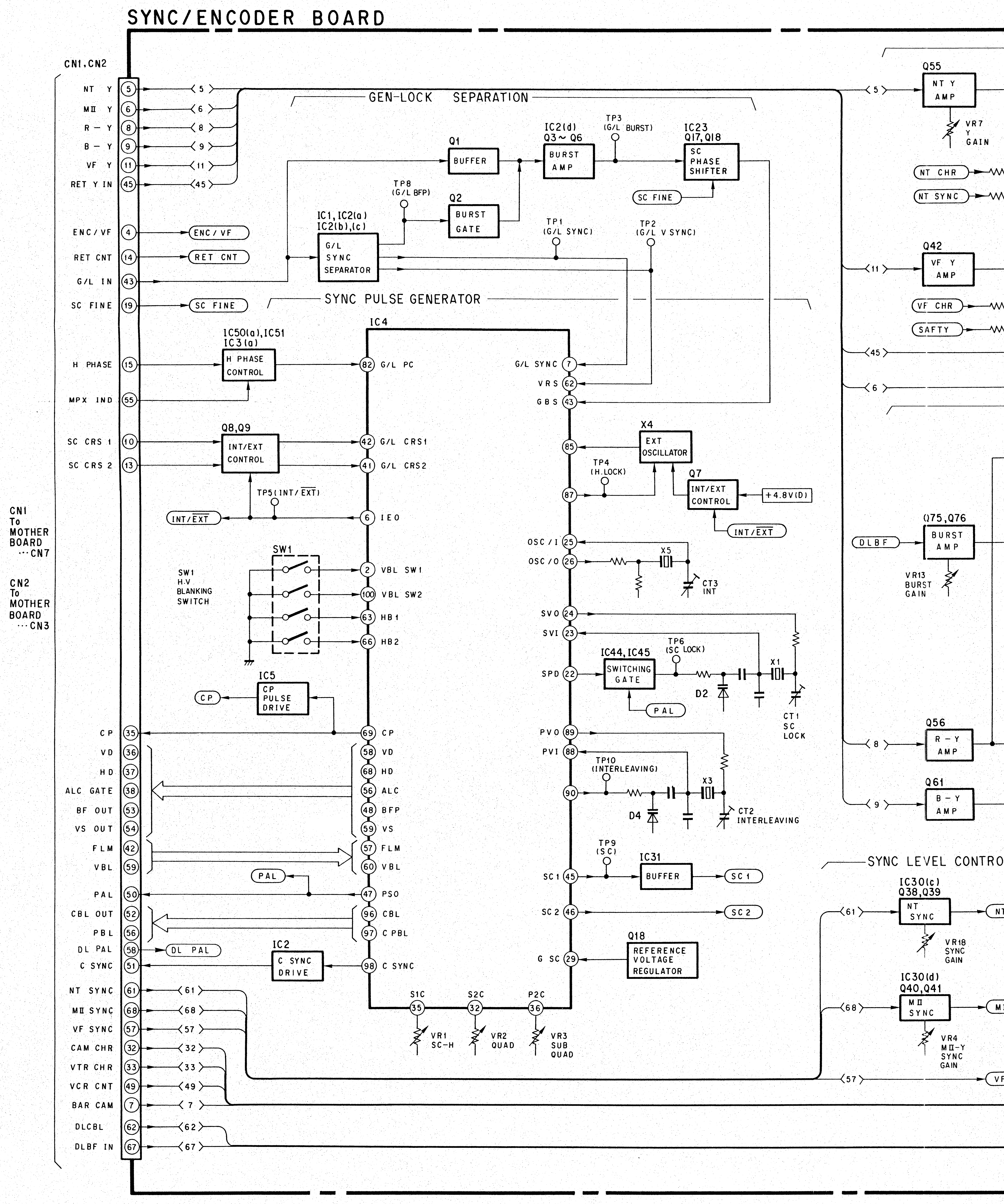
BLOCK DIAGRAM OF SYSTEM C


SYSTEM CONTROL BOARD
CN1
To MOTHER BOARD ---CN4
+9.2V
+9.2V
RCB RCU
HG CNT
R PED
G PED
B PED
R GAIN
B GAIN
I RSCNT
H PHASE
SCFINE
SCCRS 1
SCCRS 2
R-WSHD
G-WSHD
B-WSHD
R-BSHD
G-BSHD
B-BSHD
+5.2V
+5.2V
-4.4V
-4.4V
AWC CNT
ALCP/A
GATE
RECT RIG
A GND
A GND
A GND
D GND
D GND
D GND
+9.2V
+5V
-4.4V
CN2
To MOTHER BOARD ---CN6
SEL 1
SEL 2
SEL 3
ADC 0
ADC 1
ADC 2
ADC 3
SHUTT A
SHUTT B
SHUTT C
TXD
RXD
TAP CTL
TAP REW
CHAR
VD
V BLK
HD
NC
SHT SW
HG LED
AUT IND
BAT WAR
SHT LED
TALLY
ENC/VF
+6dB
CAMBAR
IRS R/A
IRS+
IRS-
GAMMA
VCR CNT
RET CNT
REC TRIG
AWC CNT
SEL1
SEL2
SEL3
ADC0
ADC1
ADC2
ADC3
SHUTT A
SHUTT B
SHUTT C
ENC/VF
+6dB
CAM BAR
IRS R/A
Q8
IC2
CPU
P16
P10
P33
P34
P35
ADC0
ADC1
ADC2
ADC3
P30
P31
P32
P15
P11
P13
P14
P17
TC102(P22)
P37
V REF+
V REF-
P36
SBT
SBO
IR00(P24)
TC101(P21)
VDD
RST
IR03(RDY/P27)
TC100(P20)
RXD(P23)
TXD(P80)
IR01(P25)
P50~P57
P60~P67
P70~P77
P40
P41
P46
P47
OSC1
OSC2
IC14
V REF REG.
+5V
-4V
IC7
H SYNC
V SYNC
BUSY
SBT
STB
SBO
CHARACTER GENERATOR
VIDEO OUT
LOSC IN
CT1 CHARACTER POSITION
Q12
V REF REG.
+5V
IC16
Q13
AMP
IC15
IC5
LD
SBT
SBO
LOAD PULSE
CLOCK
SERIAL DATA
SW1 DATA INPUT SWITCH
IC9,Q9,Q10
CPU POWER SUPPLY
+5V
Q11
SYSTEM RESET PULSE GENE
ADDRESS BUS
DATA BUS
SON
SIN
WEN
REN
TAP REW
TAP CTL
RXD
TXD
IC12
TAP REW TAP CTL SIGNAL DRIVE
RXD TXD BUFFER
VD
V DLK
HD
IC13
VD, HD V BLK PULSE DRIVE
IC1
I/O
V BLK
H BLK
P10
P12
P13
P11
P20
CD7
P14
P15
CD0
CD4
CD5
LD0~LD7
L WEN
LS1
L REN
LA0~LA15
CLK
CDATA
SIN
WEN
REN
ADR0~ADR15
D0~D7
P32
P33
P31
P30
RAMS
EROMS
CD1
CD2
CSEL0
CSEL1
CW0
CW1
CS0
CS1
CD3
CD6
HG LED
AUT IND
BAT WAR
SHT LED
TALLY
IRS+
IRS-
GAMMA
SC CRS1
SC CRS2
Q5
Q7
Q6
IC10
Q3
Q4
22~26,29~31
35~39,41~51
TP1 (RESET-1)
TP3 (RESET-2)
TP2 (GROUND)
TP4 (GROUND)
IC8 REAL TIME CLOCK
IC10
Q1
Q2
IC8
S1
S2
CLK
DE
DATA
HI:ON
IC15
IC16
IC3
EEPROM
A0~A15
OE/VPP
OE
(64K)
D0~D7
IC4
A0~A14
RE
OE
CS
Vcc
RAM (32K)
I/O1~I/O8
TP6 (BACK UP-2)
TP5 (BACK UP-1)
BT1 BATT.
D8
IC17,Q14,Q15
RAM POWER SUPPLY

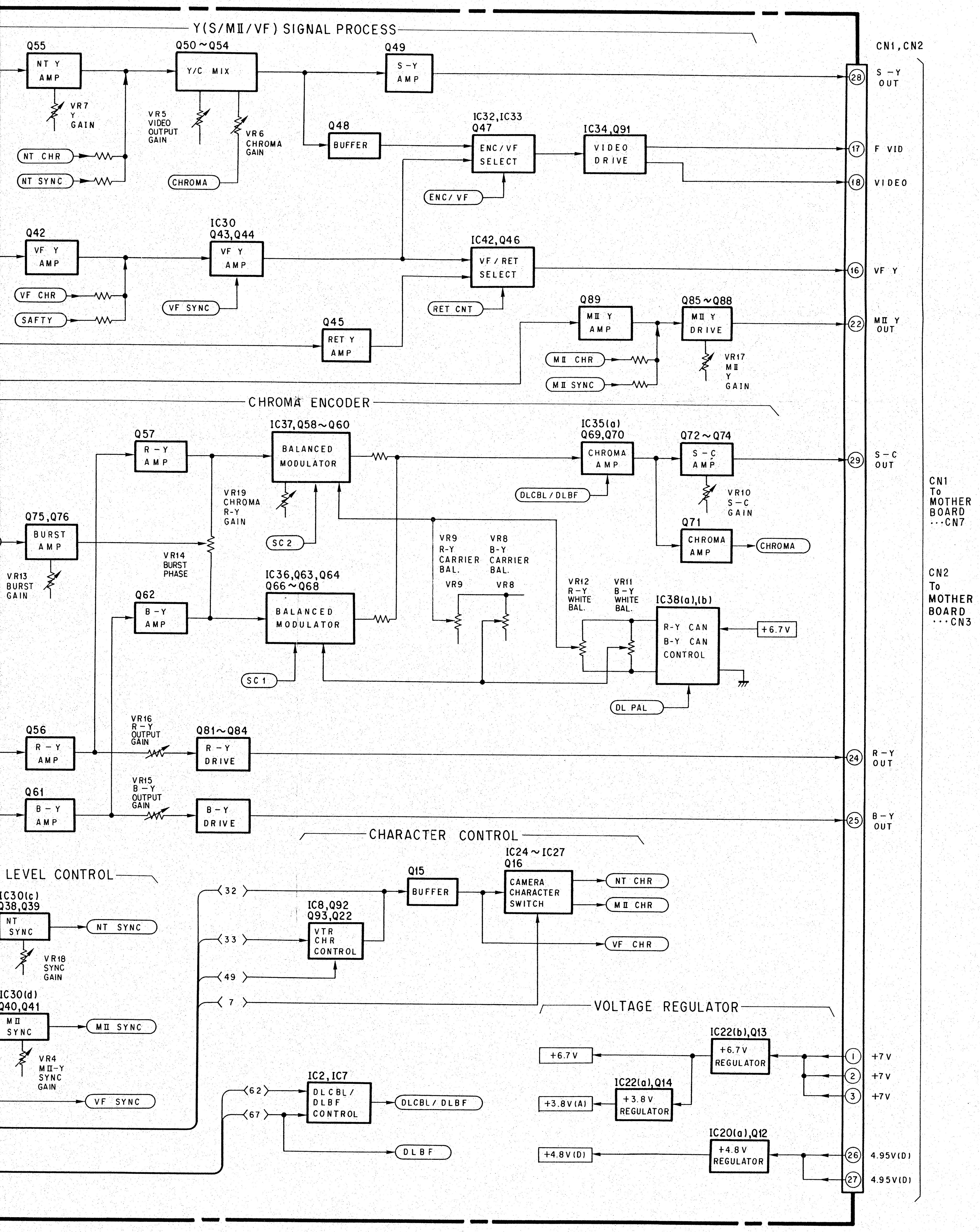
F SYSTEM CONTROL BOARD


TER
ATOR
O OUT
SC IN
19
20
Q12
V REF
REG.
+5V
IC16
Q13
AMP
20
CT1
CHARACTER
POSITION
IC15
1
IC5
15 LD
16 SBT
17 SBO
A012 13
A011 12
A010 9
A09 8
A08 7
A07 6
A06 5
A05 4
A04 3
A03 2
A02 19
A01 18
IC6
AMP
13
6
9
14
7
8
DAC0
DAC1
DAC2
DAC3
IC11
DAC
SIGNAL
DRIVE
10
4
11
3
22
3
2
15
13
14
15
21
20
19
18
16
17
+5V
IC18,Q16,Q17
+8.8V REG
+8.8V
+9.2V
IC18,Q18,Q19
-4V REG
-4V
-4.4V
IC18,Q20,Q21
+5V REG
+5 V
+5 V
CN3
1 DGND
2 A15
3 A14
4 A13
5 A12
6 A11
7 A10
8 A9
9 A8
10 A7
11 A6
12 A5
13 A4
14 A3
15 A2
16 A1
17 A0
18 LREN
19 LSI
20 LWEN
21 D7
22 D6
23 D5
24 D4
25 D3
26 D2
27 D1
28 D0
29 LMW
30 DGND
To
DIGITAL
PROCESS
BOARD
···CN2
C
B
A
DATA BUS
IC3
EEPROM
1~10,21
23~27
A0
A15
D0
D7
11~13
15~19
22
OE/VPP
20
OE
(64K)
IC4
1~10,21
23~26
A0
A14
I/01
I/08
11~13
15~19
27 RE
22 OE
20 CS
RAM
(32K)
28 Vcc
6
ACK UP-2)
TP5
(BACK UP-1)
D8
BT1
BATT.
IC17,Q14,Q15
RAM POWER
SUPPLY
+5V
WHITE SHADING CIRCUIT
MA0
MA1
IC24
18 A01
17 A02
16 A03
D0~D7 1~8
24 RESET
WR 11
D/A
C0 9
C1 10
10
9
8
IC22
BUS BUFF.
11~18 B1
B8
A1 2~9
A8
1 DIR
G 19
WHITE SHADING DATA
IC20
RAM
(32K)
20 CS
22 OE
A0
A14
1~10,21
23~26
27 RE
I/01
I/08
11~13
15~19
BLACK SHADING CIRCUIT
IC23
18 A01
17 A02
16 A03
D0~D7 1~8
24 RESET
WR 11
D/A
C0 9
C1 10
7
6
5
IC21
BUS BUFF.
11~18 B1
B8
A1 2~9
A8
1 DIR
G 19
BLACK SHADING DATA
IC19
RAM
(32K)
20 CS
22 OE
A0
A14
1~10,21
23~26
27 RE
I/01
I/08
11~13
15~19
SHADING
ADDRESS
CN4
1 DGND
2 MA0
3 MA1
4 MA2
5 MA3
6 MA4
7 MA5
8 MA6
9 MA7
10 MA8
11 MA9
12 MA10
13 MA11
14 MA12
15 MA13
16 MA14
17 SCK
18 CW0
19 CW1
20 CS0
21 CS1
22 NC
23 NVD
24 NV BLK
25 NHD
26 NC
27 DGND
28 D-APA
29 I-APA
30 DGND
A
B
C
To
DIGITAL
PROCESS
BOARD
···CN3
ADDRESS BUS
DATA BUS

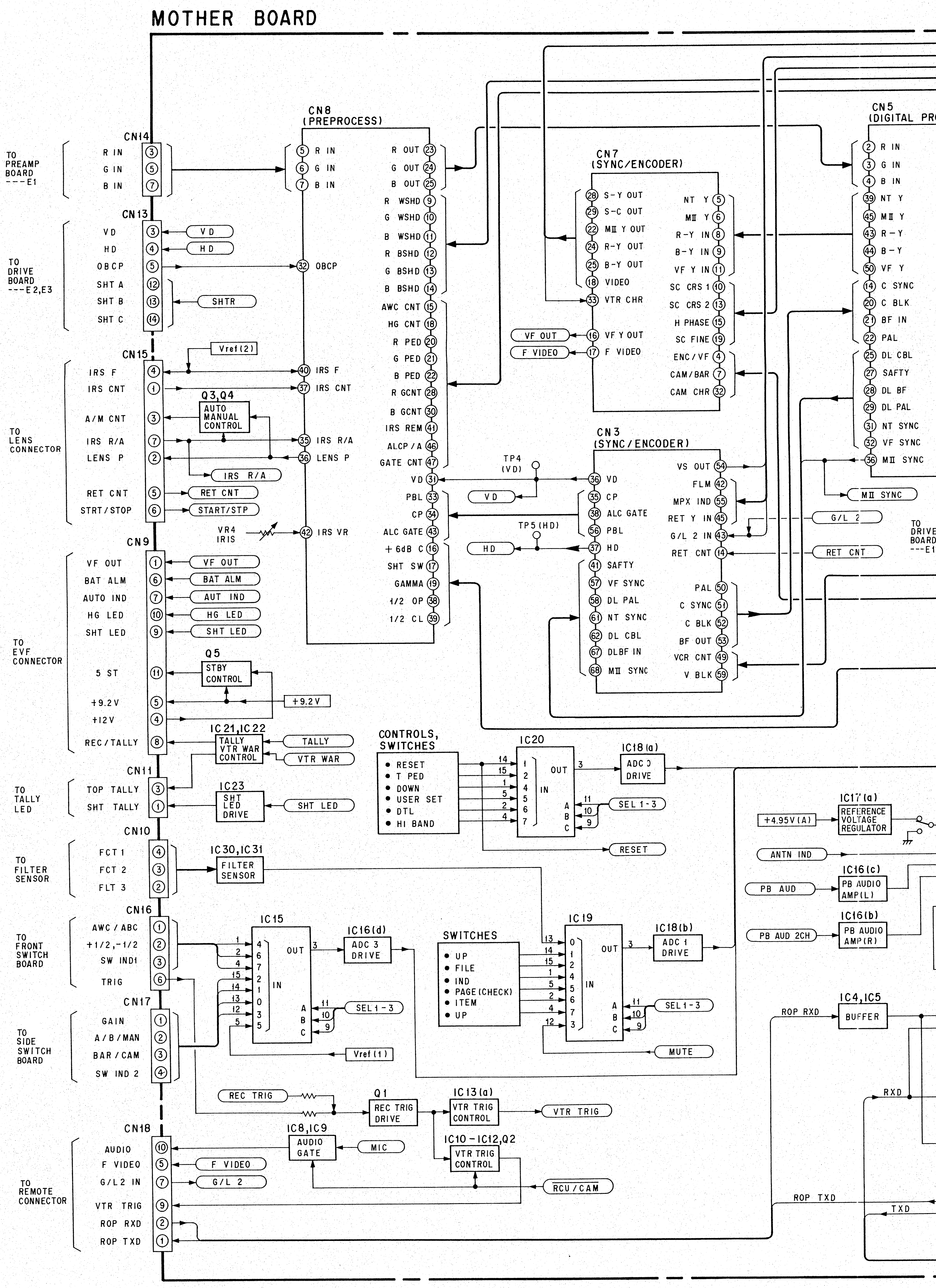
BLOCK DIAGRAM OF SYNC/E


SYNC/ENCODER BOARD
CN1,CN2
CN1 To MOTHER BOARD …CN7
CN2 To MOTHER BOARD …CN3
NT Y
MII Y
R − Y
B − Y
VF Y
RET Y IN
ENC/VF
RET CNT
G/L IN
SC FINE
H PHASE
MPX IND
SC CRS 1
SC CRS 2
CP
VD
HD
ALC GATE
BF OUT
VS OUT
FLM
VBL
PAL
CBL OUT
PBL
DL PAL
C SYNC
NT SYNC
MII SYNC
VF SYNC
CAM CHR
VTR CHR
VCR CNT
BAR CAM
DLCBL
DLBF IN
GEN-LOCK SEPARATION
Q1 BUFFER
IC2(d) Q3~Q6 BURST AMP
TP3 (G/L BURST)
IC23 Q17,Q18 SC PHASE SHIFTER
TP8 (G/L BFP)
Q2 BURST GATE
IC1,IC2(a) IC2(b),(c) G/L SYNC SEPARATOR
TP1 (G/L SYNC)
TP2 (G/L V SYNC)
SYNC PULSE GENERATOR
IC4
IC50(a),IC51 IC3(a) H PHASE CONTROL
Q8,Q9 INT/EXT CONTROL
TP5(INT/EXT)
INT/EXT
SW1
SW1 H.V BLANKING SWITCH
IC5 CP PULSE DRIVE
IC2 C SYNC DRIVE
G/L PC
G/L CRS1
G/L CRS2
IEO
VBL SW1
VBL SW2
HB1
HB2
PSO
CBL
C PBL
G/L SYNC
VRS
GBS
X4 EXT OSCILLATOR
TP4 (H.LOCK)
Q7 INT/EXT CONTROL
+4.8V(D)
OSC/I
OSC/O
X5
CT3 INT
SVO
SVI
SPD
IC44,IC45 SWITCHING GATE
TP6 (SC LOCK)
X1
D2
CT1 SC LOCK
PVO
PVI
TP10 (INTERLEAVING)
X3
D4
CT2 INTERLEAVING
TP9 (SC)
IC31 BUFFER
SC1
SC2
G SC
Q18 REFERENCE VOLTAGE REGULATOR
S1C
S2C
P2C
VR1 SC-H
VR2 QUAD
VR3 SUB QUAD
Q55 NT Y AMP
VR7 Y GAIN
NT CHR
NT SYNC
Q42 VF Y AMP
VF CHR
SAFTY
Q75,Q76 BURST AMP
DLBF
VR13 BURST GAIN
Q56 R − Y AMP
Q61 B − Y AMP
SYNC LEVEL CONTRO
IC30(c) Q38,Q39 NT SYNC
VR18 SYNC GAIN
IC30(d) Q40,Q41 MII SYNC
VR4 MII-Y SYNC GAIN

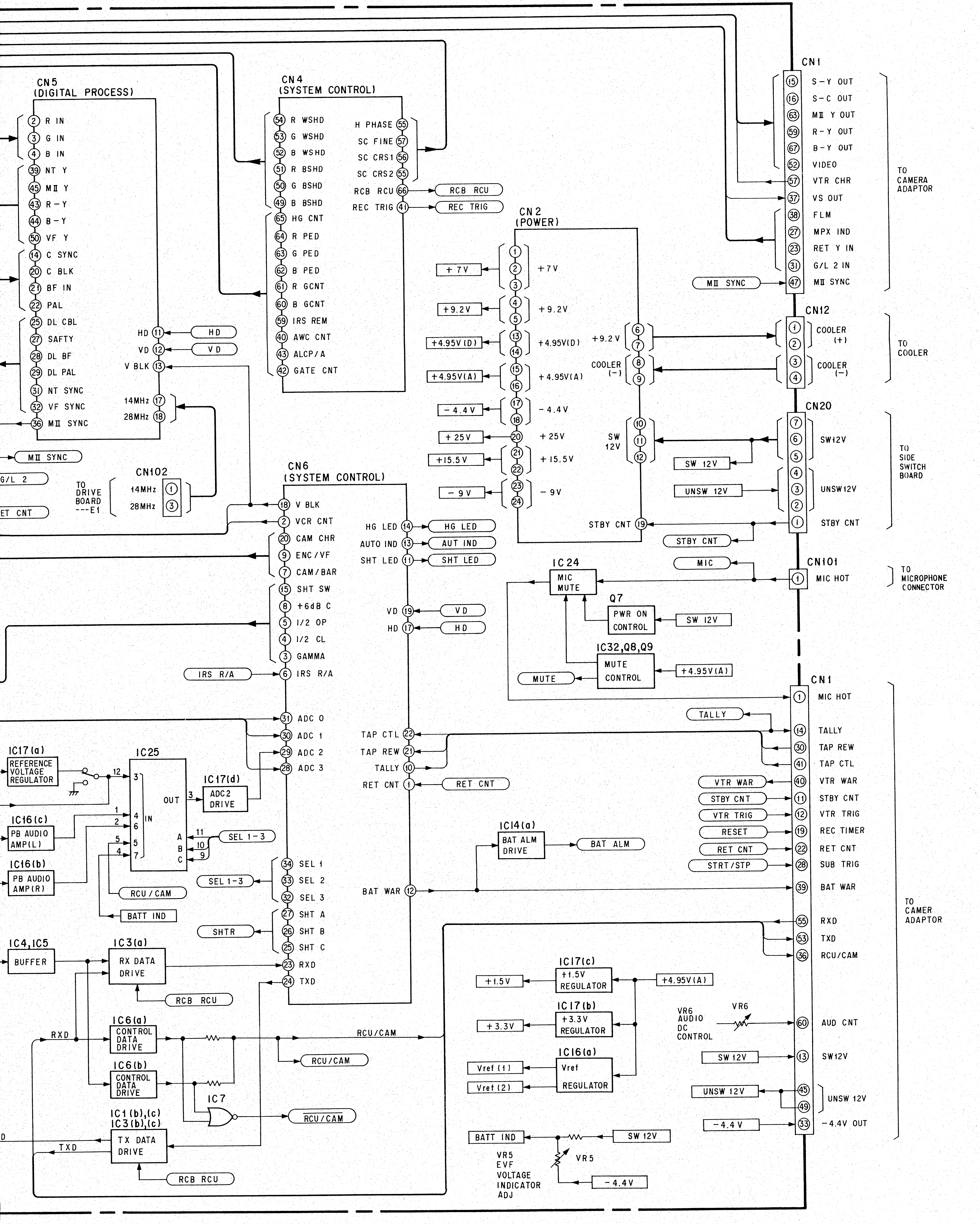
DF SYNC/ENCODER BOARD


Y(S/MⅡ/VF) SIGNAL PROCESS
Q55
NT Y AMP
VR7 Y GAIN
NT CHR
NT SYNC
Q50~Q54
Y/C MIX
VR5 VIDEO OUTPUT GAIN
VR6 CHROMA GAIN
CHROMA
Q49
S-Y AMP
Q48
BUFFER
IC32,IC33 Q47
ENC/VF SELECT
ENC/VF
IC34,Q91
VIDEO DRIVE
Q42
VF Y AMP
VF CHR
SAFTY
IC30 Q43,Q44
VF Y AMP
VF SYNC
IC42,Q46
VF/RET SELECT
RET CNT
Q45
RET Y AMP
Q89
MⅡ Y AMP
MⅡ CHR
MⅡ SYNC
Q85~Q88
MⅡ Y DRIVE
VR17 MⅡ Y GAIN
CHROMA ENCODER
Q57
R-Y AMP
IC37,Q58~Q60
BALANCED MODULATOR
VR19 CHROMA R-Y GAIN
SC2
Q75,Q76
BURST AMP
VR13 BURST GAIN
VR14 BURST PHASE
Q62
B-Y AMP
IC36,Q63,Q64 Q66~Q68
BALANCED MODULATOR
SC1
VR9 R-Y CARRIER BAL.
VR8 B-Y CARRIER BAL.
VR9
VR8
VR12 R-Y WHITE BAL.
VR11 B-Y WHITE BAL.
IC38(a),(b)
R-Y CAN B-Y CAN CONTROL
+6.7V
DL PAL
IC35(a) Q69,Q70
CHROMA AMP
DLCBL/DLBF
Q72~Q74
S-C AMP
VR10 S-C GAIN
Q71
CHROMA AMP
CHROMA
Q56
R-Y AMP
VR16 R-Y OUTPUT GAIN
Q81~Q84
R-Y DRIVE
Q61
B-Y AMP
VR15 B-Y OUTPUT GAIN
B-Y DRIVE
CHARACTER CONTROL
LEVEL CONTROL
IC30(c) Q38,Q39
NT SYNC
NT SYNC
VR18 SYNC GAIN
IC30(d) Q40,Q41
MⅡ SYNC
MⅡ SYNC
VR4 MⅡ-Y SYNC GAIN
VF SYNC
32
33
49
7
62
67
IC8,Q92 Q93,Q22
VTR CHR CONTROL
Q15
BUFFER
IC24~IC27 Q16
CAMERA CHARACTER SWITCH
NT CHR
MⅡ CHR
VF CHR
IC2,IC7
DLCBL/ DLBF CONTROL
DLCBL/ DLBF
DLBF
VOLTAGE REGULATOR
IC22(b),Q13
+6.7V REGULATOR
+6.7V
IC22(a),Q14
+3.8V REGULATOR
+3.8V(A)
IC20(a),Q12
+4.8V REGULATOR
+4.8V(D)
CN1,CN2
28 S-Y OUT
17 F VID
18 VIDEO
16 VF Y
22 MⅡ Y OUT
29 S-C OUT
24 R-Y OUT
25 B-Y OUT
1 +7V
2 +7V
3 +7V
26 4.95V(D)
27 4.95V(D)
CN1 To MOTHER BOARD ···CN7
CN2 To MOTHER BOARD ···CN3

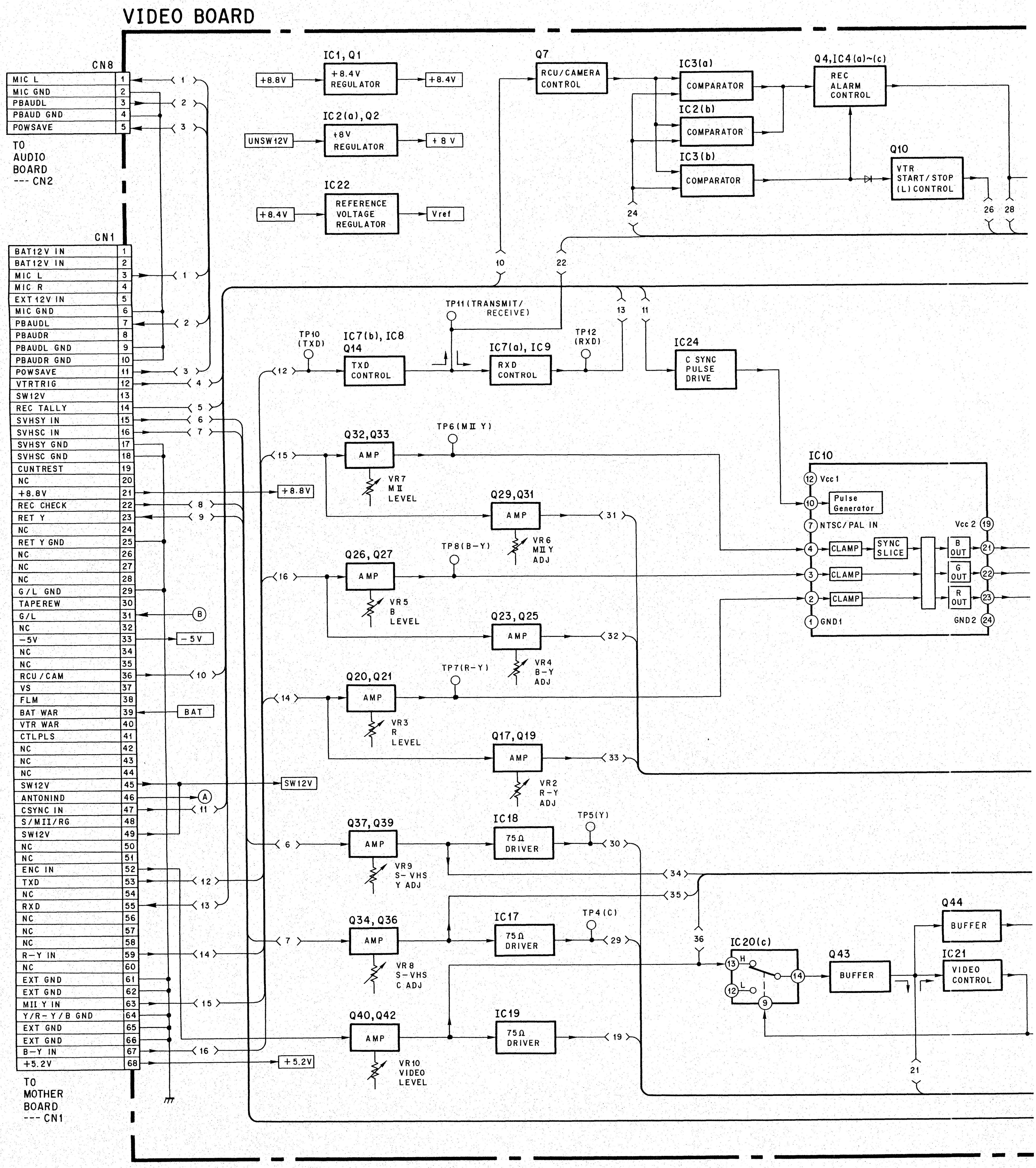
BLOCK DIAGRAM OF MC


MOTHER BOARD
CN14
TO PREAMP BOARD ---E1
R IN
G IN
B IN
CN13
TO DRIVE BOARD ---E2,E3
VD
HD
OBCP
SHT A
SHT B
SHT C
SHTR
CN15
TO LENS CONNECTOR
IRS F
IRS CNT
A/M CNT
IRS R/A
LENS P
RET CNT
STRT/STOP
Vref(2)
Q3,Q4
AUTO MANUAL CONTROL
START/STP
VR4 IRIS
CN9
TO EVF CONNECTOR
VF OUT
BAT ALM
AUTO IND
AUT IND
HG LED
SHT LED
5 ST
+9.2V
+12V
REC/TALLY
Q5
STBY CONTROL
IC21,IC22
TALLY VTR WAR CONTROL
TALLY
VTR WAR
CN11
TO TALLY LED
TOP TALLY
SHT TALLY
IC23
SHT LED DRIVE
CN10
TO FILTER SENSOR
FCT 1
FCT 2
FLT 3
IC30,IC31
FILTER SENSOR
CN16
TO FRONT SWITCH BOARD
AWC/ABC
+1/2,-1/2
SW IND1
TRIG
CN17
TO SIDE SWITCH BOARD
GAIN
A/B/MAN
BAR/CAM
SW IND 2
IC15
IN
OUT
SEL 1-3
Vref(1)
IC16(d)
ADC 3 DRIVE
REC TRIG
Q1
REC TRIG DRIVE
IC13(a)
VTR TRIG CONTROL
VTR TRIG
CN18
TO REMOTE CONNECTOR
AUDIO
F VIDEO
G/L2 IN
VTR TRIG
ROP RXD
ROP TXD
IC8,IC9
AUDIO GATE
MIC
G/L 2
IC10-IC12,Q2
VTR TRIG CONTROL
RCU/CAM
CN8 (PREPROCESS)
R OUT
G OUT
B OUT
R WSHD
G WSHD
B WSHD
R BSHD
G BSHD
B BSHD
AWC CNT
HG CNT
R PED
G PED
B PED
R GCNT
B GCNT
IRS REM
ALCP/A
GATE CNT
PBL
CP
ALC GATE
+6dB C
SHT SW
GAMMA
1/2 OP
1/2 CL
IRS VR
TP4 (VD)
TP5 (HD)
CONTROLS, SWITCHES
RESET
T PED
DOWN
USER SET
DTL
HI BAND
IC20
IC18(a)
ADC 0 DRIVE
SWITCHES
UP
FILE
IND
PAGE(CHECK)
ITEM
IC19
IC18(b)
ADC 1 DRIVE
MUTE
CN7 (SYNC/ENCODER)
S-Y OUT
S-C OUT
MII Y OUT
R-Y OUT
B-Y OUT
VIDEO
VTR CHR
VF Y OUT
F VIDEO
NT Y
MII Y
R-Y IN
B-Y IN
VF Y IN
SC CRS 1
SC CRS 2
H PHASE
SC FINE
ENC/VF
CAM/BAR
CAM CHR
CN3 (SYNC/ENCODER)
VS OUT
FLM
MPX IND
RET Y IN
G/L 2 IN
RET CNT
SAFTY
VF SYNC
DL PAL
NT SYNC
DL CBL
DLBF IN
MII SYNC
PAL
C SYNC
C BLK
BF OUT
VCR CNT
V BLK
CN5 (DIGITAL PR
NT Y
R-Y
B-Y
VF Y
BF IN
DL BF
IC17(a)
+4.95V(A)
REFERENCE VOLTAGE REGULATOR
ANTN IND
IC16(c)
PB AUD
PB AUDIO AMP(L)
IC16(b)
PB AUD 2CH
PB AUDIO AMP(R)
IC4,IC5
BUFFER
ROP RXD
RXD
ROP TXD
TXD
TO DRIVE BOARD ---E1

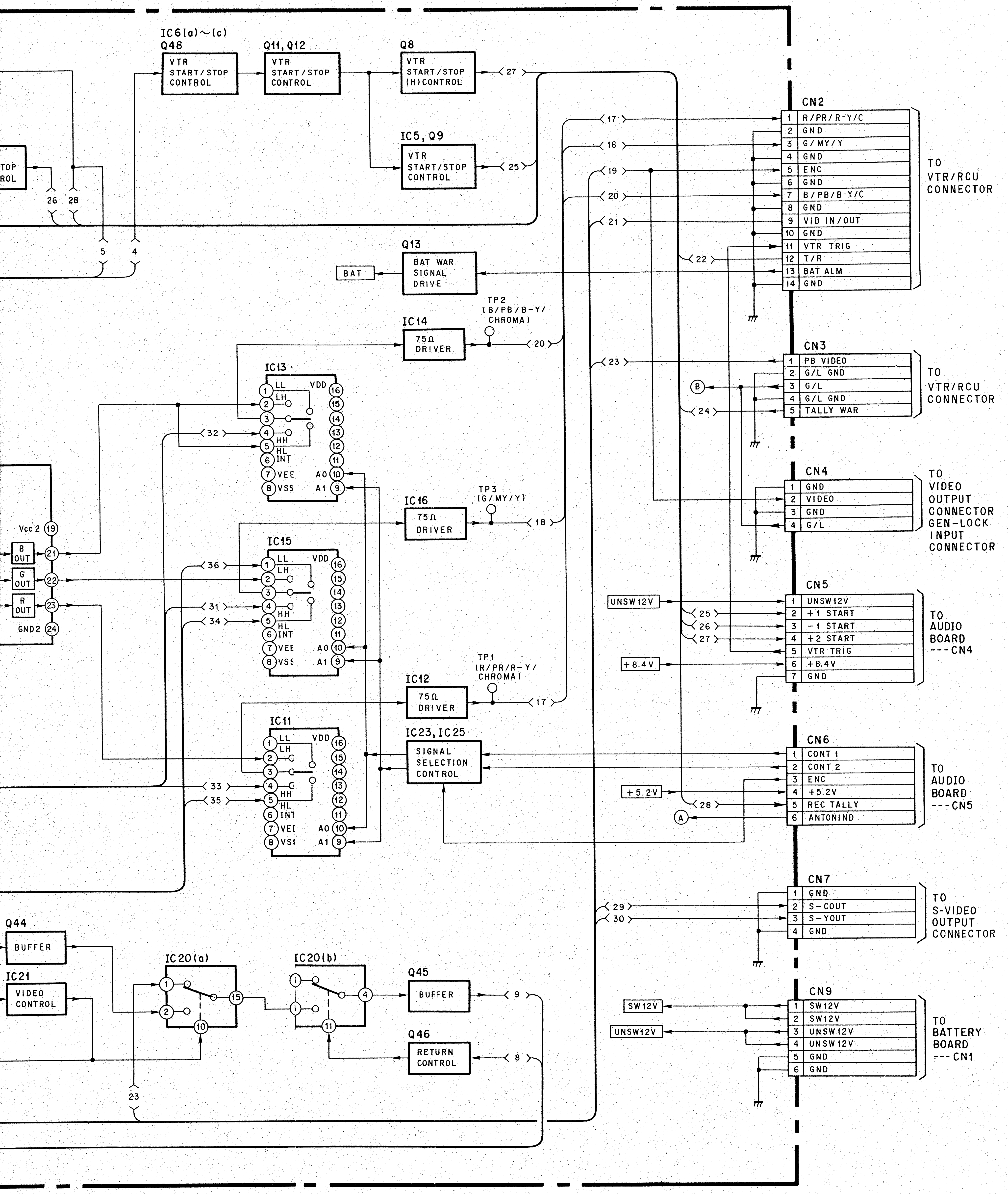
AM OF MOTHER BOARD


CN5
(DIGITAL PROCESS)
R IN
G IN
B IN
NT Y
MII Y
R－Y
B－Y
VF Y
C SYNC
C BLK
BF IN
PAL
DL CBL
SAFTY
DL BF
DL PAL
NT SYNC
VF SYNC
MII SYNC
HD
VD
V BLK
14MHz
28MHz
MII SYNC
G/L 2
ET CNT
CN102
TO DRIVE BOARD ---E1
14MHz
28MHz
CN4
(SYSTEM CONTROL)
R WSHD
G WSHD
B WSHD
R BSHD
G BSHD
B BSHD
HG CNT
R PED
G PED
B PED
R GCNT
B GCNT
IRS REM
AWC CNT
ALCP/A
GATE CNT
H PHASE
SC FINE
SC CRS1
SC CRS2
RCB RCU
REC TRIG
RCB RCU
REC TRIG
CN2
(POWER)
+7V
+9.2V
+4.95V(D)
+4.95V(A)
－4.4V
+25V
+15.5V
－9V
+9.2V
COOLER (－)
SW 12V
STBY CNT
CN1
S－Y OUT
S－C OUT
MII Y OUT
R－Y OUT
B－Y OUT
VIDEO
VTR CHR
VS OUT
FLM
MPX IND
RET Y IN
G/L 2 IN
MII SYNC
TO CAMERA ADAPTOR
CN12
COOLER (+)
COOLER (－)
TO COOLER
CN20
SW12V
UNSW12V
STBY CNT
SW 12V
UNSW 12V
TO SIDE SWITCH BOARD
CN101
MIC HOT
TO MICROPHONE CONNECTOR
STBY CNT
MIC
CN6
(SYSTEM CONTROL)
V BLK
VCR CNT
CAM CHR
ENC/VF
CAM/BAR
SHT SW
+6dB C
1/2 OP
1/2 CL
GAMMA
IRS R/A
IRS R/A
HG LED
AUTO IND
SHT LED
HG LED
AUT IND
SHT LED
VD
HD
ADC 0
ADC 1
ADC 2
ADC 3
TAP CTL
TAP REW
TALLY
RET CNT
SEL 1
SEL 2
SEL 3
SHT A
SHT B
SHT C
RXD
TXD
BAT WAR
IC24
MIC MUTE
Q7
PWR ON CONTROL
IC32,Q8,Q9
MUTE CONTROL
MUTE
+4.95V(A)
CN1
MIC HOT
TALLY
TAP REW
TAP CTL
VTR WAR
STBY CNT
VTR TRIG
REC TIMER
RET CNT
SUB TRIG
BAT WAR
RXD
TXD
RCU/CAM
AUD CNT
SW12V
UNSW 12V
－4.4V OUT
TALLY
VTR WAR
STBY CNT
VTR TRIG
RESET
RET CNT
STRT/STP
TO CAMER ADAPTOR
IC17(a)
REFERENCE VOLTAGE REGULATOR
IC25
IN
OUT
A
B
C
IC17(d)
ADC2 DRIVE
IC16(c)
PB AUDIO AMP(L)
IC16(b)
PB AUDIO AMP(R)
SEL 1－3
RCU/CAM
BATT IND
SHTR
IC14(a)
BAT ALM DRIVE
BAT ALM
IC4,IC5
BUFFER
IC3(a)
RX DATA DRIVE
RCB RCU
IC6(a)
CONTROL DATA DRIVE
IC6(b)
CONTROL DATA DRIVE
IC7
RCU/CAM
RCU/CAM
RCU/CAM
RXD
TXD
IC1(b),(c)
IC3(b),(c)
TX DATA DRIVE
RCB RCU
IC17(c)
+1.5V REGULATOR
+1.5V
IC17(b)
+3.3V REGULATOR
+3.3V
IC16(a)
Vref REGULATOR
Vref (1)
Vref (2)
VR6 AUDIO DC CONTROL
VR6
BATT IND
SW 12V
VR5
VR5 EVF VOLTAGE INDICATOR ADJ
－4.4V

BLOCK DIAGRAM OF VIDEO BOAR


VIDEO BOARD
CN8
MIC L 1
MIC GND 2
PBAUDL 3
PBAUD GND 4
POWSAVE 5
TO AUDIO BOARD --- CN2
CN1
BAT12V IN 1
BAT12V IN 2
MIC L 3
MIC R 4
EXT 12V IN 5
MIC GND 6
PBAUDL 7
PBAUDR 8
PBAUDL GND 9
PBAUDR GND 10
POWSAVE 11
VTRTRIG 12
SW12V 13
REC TALLY 14
SVHSY IN 15
SVHSC IN 16
SVHSY GND 17
SVHSC GND 18
CUNTREST 19
NC 20
+8.8V 21
REC CHECK 22
RET Y 23
NC 24
RET Y GND 25
NC 26
NC 27
NC 28
G/L GND 29
TAPEREW 30
G/L 31
NC 32
−5V 33
NC 34
NC 35
RCU/CAM 36
VS 37
FLM 38
BAT WAR 39
VTR WAR 40
CTLPLS 41
NC 42
NC 43
NC 44
SW12V 45
ANTONIND 46
CSYNC IN 47
S/MII/RG 48
SW12V 49
NC 50
NC 51
ENC IN 52
TXD 53
NC 54
RXD 55
NC 56
NC 57
NC 58
R−Y IN 59
NC 60
EXT GND 61
EXT GND 62
MII Y IN 63
Y/R−Y/B GND 64
EXT GND 65
EXT GND 66
B−Y IN 67
+5.2V 68
TO MOTHER BOARD --- CN1
IC1, Q1
+8.8V
+8.4V REGULATOR
+8.4V
IC2(a), Q2
UNSW12V
+8V REGULATOR
+8 V
IC22
+8.4V
REFERENCE VOLTAGE REGULATOR
Vref
Q7
RCU/CAMERA CONTROL
IC3(a)
COMPARATOR
IC2(b)
COMPARATOR
IC3(b)
COMPARATOR
Q4, IC4(a)~(c)
REC ALARM CONTROL
Q10
VTR START/STOP (L) CONTROL
24
26
28
10
22
TP11 (TRANSMIT/RECEIVE)
TP10 (TXD)
IC7(b), IC8 Q14
TXD CONTROL
IC7(a), IC9
RXD CONTROL
TP12 (RXD)
13
11
IC24
C SYNC PULSE DRIVE
TP6 (MII Y)
Q32, Q33
AMP
VR7 MII LEVEL
+8.8V
Q29, Q31
AMP
VR6 MII Y ADJ
31
TP8 (B−Y)
Q26, Q27
AMP
VR5 B LEVEL
Q23, Q25
AMP
VR4 B−Y ADJ
32
TP7 (R−Y)
Q20, Q21
AMP
VR3 R LEVEL
Q17, Q19
AMP
VR2 R−Y ADJ
33
IC10
12 Vcc1
10 Pulse Generator
7 NTSC/PAL IN
4 CLAMP
SYNC SLICE
3 CLAMP
2 CLAMP
1 GND1
Vcc2 19
B OUT 21
G OUT 22
R OUT 23
GND2 24
B
−5V
BAT
SW12V
A
Q37, Q39
AMP
VR9 S−VHS Y ADJ
IC18
75Ω DRIVER
TP5 (Y)
30
34
35
Q34, Q36
AMP
VR8 S−VHS C ADJ
IC17
75Ω DRIVER
TP4 (C)
29
36
IC20(c)
13 H
12 L
14
9
Q43
BUFFER
Q44
BUFFER
IC21
VIDEO CONTROL
21
Q40, Q42
AMP
VR10 VIDEO LEVEL
IC19
75Ω DRIVER
19
+5.2V
1
2
3
4
5
6
7
8
9
12
14
15
16

O BOARD (CAMERA ADAPTOR)


IC6(a)~(c)
Q48
VTR START/STOP CONTROL
Q11, Q12
VTR START/STOP CONTROL
Q8
VTR START/STOP (H)CONTROL
IC5, Q9
VTR START/STOP CONTROL
TOP
ROL
26
28
5
4
27
25
Q13
BAT WAR SIGNAL DRIVE
BAT
TP2
(B/PB/B-Y/CHROMA)
IC14
75Ω DRIVER
20
IC13
LL
LH
HH
HL
INT
VEE
VSS
VDD
A0
A1
32
IC16
75Ω DRIVER
TP3
(G/MY/Y)
18
IC15
36
31
34
Vcc 2
B OUT
G OUT
R OUT
GND 2
19
21
22
23
24
IC12
75Ω DRIVER
TP1
(R/PR/R-Y/CHROMA)
17
IC11
33
35
IC23, IC25
SIGNAL SELECTION CONTROL
Q44
BUFFER
IC21
VIDEO CONTROL
IC20(a)
IC20(b)
Q45
BUFFER
Q46
RETURN CONTROL
9
8
23
29
30
17
18
19
20
21
22
23
24
25
26
27
28
UNSW12V
+8.4V
+5.2V
SW12V
UNSW12V
Ⓐ
Ⓑ
CN2
1 R/PR/R-Y/C
2 GND
3 G/MY/Y
4 GND
5 ENC
6 GND
7 B/PB/B-Y/C
8 GND
9 VID IN/OUT
10 GND
11 VTR TRIG
12 T/R
13 BAT ALM
14 GND
TO VTR/RCU CONNECTOR
CN3
1 PB VIDEO
2 G/L GND
3 G/L
4 G/L GND
5 TALLY WAR
TO VTR/RCU CONNECTOR
CN4
1 GND
2 VIDEO
3 GND
4 G/L
TO VIDEO OUTPUT CONNECTOR GEN-LOCK INPUT CONNECTOR
CN5
1 UNSW12V
2 +1 START
3 -1 START
4 +2 START
5 VTR TRIG
6 +8.4V
7 GND
TO AUDIO BOARD ---CN4
CN6
1 CONT 1
2 CONT 2
3 ENC
4 +5.2V
5 REC TALLY
6 ANTONIND
TO AUDIO BOARD ---CN5
CN7
1 GND
2 S-COUT
3 S-YOUT
4 GND
TO S-VIDEO OUTPUT CONNECTOR
CN9
1 SW12V
2 SW12V
3 UNSW12V
4 UNSW12V
5 GND
6 GND
TO BATTERY BOARD ---CN1

ORDER NO. AVS9301642C8

Service Manual

Vol. 4

Replacement Parts List
Exploded View

Colour Video Camera

WV-F500E Series

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Panasonic

REPLACEMENT PARTS LIST

Important Notice

1. Components identified by "⚠" mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
2. RTL : Retention Time Limited,

COLOR VIDEO CAMERA WV-F500

MISCELLANEOUS

REF.NO.	PART NO.	DESCRIPTION
D101	YWBD607RGBLK	LED
MIC1	MC500U01	Unit
CF101	YWSFC6	Filter
JK101	YWYAE329800A	Jack
E100	YFV0009-005B	Cable
CN101	YWDB201N633	EVF Connector
CN102	YWDBNCSW	BNC Connector
CN113	HR10E10R12S	Lens Connector
CN114	YW1703633	Connector Plug Houding-pin
CN115	YW1721651	Connector Plug Houding
CN116	YW14803493	Connector Holder A
CN117	YW14803500	Connector Holder B
CN118	YW606175	Connector Holder-pin
CN119	YW606185	Connector Holder-pin
CN120	HR10A10R10S	RCB Connector
E1	YW0P-80	Cord Clamp
M2	YWV5EA0698A3	Filter Cover
M3	YWV5EA0699A3	Filter Case
M4	YWV5EA1214A1	Right Side Cover
M5	YWV5EB0693A1	Upper Cover
M6	YWV5EC0694A1	Rear Cover
M7	YWV5ED0846A1	Lefth Side Cover
M8	YWV6EA0174A3	Lid
M9	YWV5RA0249A4	Knob
M10	YWV5RA0281A4	Knob
M11	YWV5RA0328A3	Knob
M12	YFV6JA0026A4	Button
M13	YWV6JA0041A4	Button
M14	YWV6JA0147A3	Button
M15	YWV6JC0056A4	Button
M16	YWV2SA1400A4	Mounting Angle
M17	YWV2SA1407A4	Mounting Angle
M18	YWV2SA1432A4	Mounting Angle
M19	YWV2SB1400A4	Mounting Angle
M20	YWV2HA0840A4	Shield Parts
M21	YWV2HA1073A2	Shield Parts
M22	YWV6GA0127A4	Plate
M23	YWV2FA0465A4	Cushion
M24	YWV2FB0465A4	Cushion
M25	YWV2NA0273A4	Spacer
M26	YWV4JA0156B4	Spring
M27	YWV4JA0285A4	Spring
M28	YWV4JA0360A4	Spring
M29	YWV5VA0079A2	Pad
M30	YWV2VA0043A3	Barrier
M31	YWV2VA0044A4	Barrier
M32	YWV7SA0990A4	Label
M33	YWV7MA0389A4	Monitor Coution Label
M34	YWV7PA0070A4	Badge
M35	YWV7QA2887A3	Main Label
M36	YWV7QA2962A3	Main Label
M37	YWV7SA1753A3	Label
M38	YWV2KC0592A1	Chassis
M39	YWV1HA0054A4	Pin
M40	YWV2GA0065A4	Cord Clamp
M41	YWV2EA0188A2	Guide
M42	YWV2EA0189A2	Guide
M43	YWV4FA0028B4	Bearing
M44	CAP410A	Cap
M45	YWV3CA0175A3	Parts Holder
M46	YWV0EA0223AN	Cooler G
M47	YWV0EA0224AN	Cooler B
M48	YWV0EA0225AN	Cooler R
M49	YWV7SA0779A4	Hight Voltage Label
M51	YWV2XA0087A4	Protector
M52	YWV0EA0241AN	Head Optical Assy
M53	YWV0EA0227AN	Filter Disk
M54	YWV2EA0051A4	Guide Roller
M55	YWV1HA0025A4	Pin
M56	YWV1EA0110A4	Guide Roller Screw
M57	YWV4JA0146A4	Spring Plate
M58	YWV5EA1215A1	Cover
M59	YWV2JA0087A3	Bracing Strut
M60	YWV4JA0366A4	Spring
M61	YWV1EA0219A4	Special Screw
M62	YWV1FA0063A4	Nut
M63	YFV4SA0002A4	Roller
M64	YWV5WA1455A3	Rear Panel
M65	YWV5EA1010A4	RCB Cover
M66	YWV5EA1216A1	Shoulder Cover
M67	YWV5EA1217A2	Cover
M68	YWV5EA1218A2	Lock Cover
M70	YWV5VA0080A1	Pad
M71	YWV2EA0193A4	Guide
M72	YWV6GA0232A4	Plate

REF.NO.	PART NO.	DESCRIPTION
M75	YFV7MA0099A4	Caution Label
M76	YWV2SA2468A4	Mounting Angle
M78	YWV0EA0226AN	Bayonet Mount
M79	YWV2KA0591A1	Chassis

FILTER SENSOR BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB1 (RTL)	YWVKYF500P1A	Printed Circuit Board Assy
Q1-3	NJL5803KF1	Transistor
R1-3	YWR0816P331D	Metal 330 ohms 1/16W

DRIVE BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB2 (RTL)	YWVKBF500E1A	Printed Circuit Board Assy
IC1	TC74HC4050AF	IC
IC2	UPD74HC367G	IC
IC3	YWCXD1255Q	IC
IC5	YWTC74AC04AF	IC
IC6	YWUPD74HC04G	IC
IC10	YWUPC4064G2	IC
IC12	TC74HC4050AF	IC
IC13	SN74HC4040DB	IC
IC14	CD74HC4046AM	IC
IC15	YWSN74HC21DB	IC
IC16	YWSN74HC74DB	IC
Q1-3	2SB1218A-QR	Transistor
Q4	2SA1462	Transistor
Q5,6	2SC3735	Transistor
Q7	2SA1462	Transistor
Q9-11	2SD1819-QRS	Transistor
Q12	2SB1218A-QR	Transistor
Q13,14	2SD1819-QRS	Transistor
Q15	2SB1218A-QR	Transistor
Q16	2SD874A-RS	Transistor
Q17	2SB1218A-QR	Transistor
Q18	2SD874A-RS	Transistor
Q19	2SB1218A-QR	Transistor
Q22	2SB766A-QR	Transistor
Q23	2SD1819-QRS	Transistor
D1	MA121	Diode
D2	MA159	Diode
D3,4	MA143	Diode
D5	MA121	Diode
D6	MA159	Diode

REF.NO.	PART NO.	DESCRIPTION
R1-6	ERJ3GEYJ470	Carbon 47 ohms 1/16W
R7,8	ERJ3GEYJ100	Carbon 10 ohms 1/16W
R10	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R11	YWR0816P102D	Metal 1K ohms 1/16W
R12	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R14	YWR0816P751D	Metal 750 ohms 1/16W
R15,16	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R17-19	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R20-22	ERJ3GEYJ104	Carbon 100K ohms 1/16W
R23	ERJ3GEYJ105	Carbon 1M ohms 1/16W
R24	ERJ3GEYJ100	Carbon 10 ohms 1/16W
R25,26	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R27-31	ERJ3GEYJ470	Carbon 47 ohms 1/16W
R33	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R34	ERJ3GEYJ105	Carbon 1M ohms 1/16W
R36	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R37-39	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R40	YWR0816P222D	Metal 2.2K ohms 1/16W
R41,44	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R45	ERJ3GEYJ223	Carbon 22K ohms 1/16W
R46,48	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R49	ERJ3GEYJ104	Carbon 100K ohms 1/16W
R50	ERJ3GEYJ106	Carbon 10M ohms 1/16W
R51	YWR0816P303D	Metal 30K ohms 1/16W
R52	YWR0816R393D	Metal 39K ohms 1/16W
R53-55	ERJ3GEYJ104	Carbon 100K ohms 1/16W
R56-58	ERJ3GEYJ105	Carbon 1M ohms 1/16W
R59,60	ERJ3GEYJ150	Carbon 15 ohms 1/16W
R61	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R62	ERJ3GEYJ333	Carbon 33K ohms 1/16W
R63	ERJ3GEYJ472	Carbon 4.7K ohms 1/16W
R64	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R65,66	ERJ3GEYJ104	Carbon 100K ohms 1/16W
R67	YWR0816P183D	Metal 18K ohms 1/16W
R68	YWR0816R334D	Metal 330K ohms 1/16W
R70,71	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R73	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R74,75	ERJ3GEYJ104	Carbon 100K ohms 1/16W
R77-79	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R82	ERJ3GEYJ331	Carbon 330 ohms 1/16W
R83	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R84	YWR0816R393D	Metal 39K ohms 1/16W
R85	YWR0816P133D	Metal 13K ohms 1/16W
R86	YWR0816R473D	Metal 47K ohms 1/16W
R87	YWR0816P153D	Metal 15K ohms 1/16W
R94	ERJ3GEYJ331	Carbon 330 ohms 1/16W
R95	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R96	YWR0816R393D	Metal 39K ohms 1/16W
R97	YWR0816P133D	Metal 13K ohms 1/16W
R98	YWR0816R473D	Metal 47K ohms 1/16W
R99	YWR0816P153D	Metal 15K ohms 1/16W
R114,115	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R117-119	ERJ3GEY0R00	Carbon 0 ohms 1/16W
VR1-3	EVM7JGA30B15	Variable Resistor 100K ohms
VR4-6	EVM7JSW30B25	Variable Resistor 200K ohms

REF.NO.	PART NO.	DESCRIPTION	
C5	SK21A476KRD0	Electrolytic	47 µF 10V
C6-8	YW5F104Z2VB	Ceramic	0.1 µF
C9-11	ECEV1CV100	Electrolytic	10 µF 16V
C12-14	YW5F104Z2VB	Ceramic	0.1 µF
C15	YW5CH470J5VB	Ceramic	47 pF
C16	YW5CH181J5VB	Ceramic	180 pF
C19-21	SK21A476KRD0	Electrolytic	47 µF 10V
C22	YW5X103K2VB	Ceramic	0.01 µF
C26	YW5CH330J5VB	Ceramic	33 pF
C27,28	SK21A476KRD0	Electrolytic	47 µF 10V
C32	YWSK1V104KRA	Electrolytic	0.1 µF 35V
C33	YW5X103K2VB	Ceramic	0.01 µF
C35-37	ECEV1EV100	Electrolytic	10 µF 25V
C38-40	ECEV1HV3R3SR	Electrolytic	3.3 µF 50V
C41	YW5F473Z2VB	Ceramic	0.047 µF
C42	YW5CH471J5VB	Ceramic	470 pF
C43	ECEV1HV100SP	Electrolytic	10 µF 50V
C44	YWRJ335V470M	Electrolytic	47 µF 35V
C48	YW5X103K2VB	Ceramic	0.01 µF
C49	SK21A476KRD0	Electrolytic	47 µF 10V
C54-57	YW5F104Z2VB	Ceramic	0.1 µF
C58	ECEV0JV101	Electrolytic	100 µF 6.3V
C59	YWRJ310V101M	Electrolytic	100 µF 10V
C60	ECEV1CV220	Electrolytic	22 µF 16V
C61,64	ECEV1CV470	Electrolytic	47 µF 16V
C65	YWRJ325V101M	Electrolytic	10 µF 25V
C66	ECEV1CV220	Electrolytic	22 µF 16V
C67	YWRJ325V470M	Electrolytic	47 µF 25V
C71	ECEV0JV101	Electrolytic	100 µF 6.3V
C73	ECEV1CV470	Electrolytic	47 µF 16V
C74	YW5CH220J5VB	Ceramic	22 pF
L1	YWNL328R2K	Coil	8.2 µH
L2-6	YWNL32470K	Coil	470 µH
X1	YWVX0920B3	Crystal Oscillator	
CF1	NFM41R00C101	Filter	
CF2	NFM41R00C221	Filter	
CN1	YW522052690	26-pin Connector	
CN2	PS10SDD4TS11	10-pin Connector	
TP1-7	YWRCT2125TPV	Test Point	

REF.NO.	PART NO.	DESCRIPTION
	PREAMP BOARD	
PCB3 (RTL)	YWVKCF500E1A	Printed Circuit Board Assy
IC1	YWUPC4062G2	IC
Q1	2SA1532-CD	Transistor
Q2	2SB766A-QR	Transistor
Q3	2SD1819-QRS	Transistor
Q4	2SD874A-RS	Transistor
Q5	2SB1218-QRS	Transistor
Q101	2SA1532-CD	Transistor
Q102	3SK157	FET
Q103	2SC3931-CD	Transistor
Q104	2SA1532-CD	Transistor
Q105	3SK157	FET
Q106	2SC3931-CD	Transistor
Q107,108	2SD1819-QRS	Transistor
Q109,110	2SC3931-CD	Transistor
Q111-113	2SA1532-CD	Transistor
Q114	2SC3931-CD	Transistor
Q115	2SA1532-CD	Transistor
Q116,117	2SC3931-CD	Transistor
Q118	2SA1532-CD	Transistor
Q119	3SK157	FET
Q120,121	2SC3931-CD	Transistor
Q122,201	2SA1532-CD	Transistor
Q202	3SK157	FET
Q203	2SC3931-CD	Transistor
Q204	2SA1532-CD	Transistor
Q205	3SK157	FET
Q206	2SC3931-CD	Transistor
Q207,208	2SD1819-QRS	Transistor
Q209,210	2SC3931-CD	Transistor
Q211-213	2SA1532-CD	Transistor
Q214	2SC3931-CD	Transistor
Q215	2SA1532-CD	Transistor
Q216,217	2SC3931-CD	Transistor
Q218	2SA1532-CD	Transistor
Q219	3SK157	FET
Q220,221	2SC3931-CD	Transistor
Q222,301	2SA1532-CD	Transistor
Q302	3SK157	FET
Q303	2SC3931-CD	Transistor
Q304	2SA1532-CD	Transistor
Q305	3SK157	FET
Q306	2SC3931-CD	Transistor
Q307,308	2SD1819-QRS	Transistor
Q309,310	2SC3931-CD	Transistor
Q311-313	2SA1532-CD	Transistor
Q314	2SC3931-CD	Transistor
Q315	2SA1532-CD	Transistor
Q316,317	2SC3931-CD	Transistor
Q318	2SA1532-CD	Transistor
Q319	3SK157	FET

REF.NO.	PART NO.	DESCRIPTION	
Q320,321	2SC3931-CD	Transistor	
Q322	2SA1532-CD	Transistor	
R1,2	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R3	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R4	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R5	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R6	YWR0816P912D	Metal	9.1K ohms 1/16W
R7	YWR0816P123D	Metal	12K ohms 1/16W
R8,9	YWR0816P103D	Metal	10K ohms 1/16W
R10	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R11	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R12	YWR0816P912D	Metal	9.1K ohms 1/16W
R13	YWR0816P123D	Metal	12K ohms 1/16W
R14,15	YWR0816P103D	Metal	10K ohms 1/16W
R101	ERJ3GEYJ241	Carbon	240 ohms 1/16W
R102	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R103	ERJ3GEYJ242	Carbon	2.4K ohms 1/16W
R104	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R105,106	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R107	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R108	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R109	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R110	ERJ3GEYJ303	Carbon	30K ohms 1/16W
R111	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R112	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R113	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R114	ERJ3GEYJ330	Carbon	33 ohms 1/16W
R115	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R116	ERJ3GEYJ151	Carbon	150 ohms 1/16W
R117	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R118	ERJ3GEYJ394	Carbon	390K ohms 1/16W
R119	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R120	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R121	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R122	ERJ3GEYJ752	Carbon	7.5K ohms 1/16W
R123	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R124	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R125	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R126	ERJ3GEYJ562	Carbon	5.6K ohms 1/16W
R127	ERJ3GEYJ751	Carbon	750 ohms 1/16W
R128	ERJ3GEYJ752	Carbon	7.5K ohms 1/16W
R129	ERJ3GEYJ562	Carbon	5.6K ohms 1/16W
R130	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R131,132	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R133	ERJ3GEYJ822	Carbon	8.2K ohms 1/16W
R134	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R135,136	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R137	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R138	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R139	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R140	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R141	ERJ3GEYJ330	Carbon	33 ohms 1/16W
R142,143	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R144	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R145	ERJ3GEYJ103	Carbon	10K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R146	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R201	ERJ3GEYJ241	Carbon	240 ohms 1/16W
R202	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R203	ERJ3GEYJ242	Carbon	2.4K ohms 1/16W
R204	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R205,206	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R207	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R208	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R209	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R210	ERJ3GEYJ303	Carbon	30K ohms 1/16W
R211	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R212	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R213	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R214	ERJ3GEYJ330	Carbon	33 ohms 1/16W
R215	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R216	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R217	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R218	ERJ3GEYJ394	Carbon	390K ohms 1/16W
R219	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R220	ERJ3GEYJ271	Carbon	270 ohms 1/16W
R221	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R222	ERJ3GEYJ752	Carbon	7.5K ohms 1/16W
R223	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R224	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R225	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R226	ERJ3GEYJ562	Carbon	5.6K ohms 1/16W
R227	ERJ3GEYJ751	Carbon	750 ohms 1/16W
R228	ERJ3GEYJ752	Carbon	7.5K ohms 1/16W
R229	ERJ3GEYJ562	Carbon	5.6K ohms 1/16W
R230	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R231,232	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R233	ERJ3GEYJ822	Carbon	8.2K ohms 1/16W
R234	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R235,236	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R237	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R238	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R239	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R240	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R241	ERJ3GEYJ330	Carbon	33 ohms 1/16W
R242,243	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R244	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R245	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R246	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R301	ERJ3GEYJ241	Carbon	240 ohms 1/16W
R302	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R303	ERJ3GEYJ242	Carbon	2.4K ohms 1/16W
R304	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R305,306	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R307	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R308	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R309	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R310	ERJ3GEYJ303	Carbon	30K ohms 1/16W
R311	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R312	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R313	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R314	ERJ3GEYJ330	Carbon	33 ohms 1/16W
R315	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R316	ERJ3GEYJ151	Carbon	150 ohms 1/16W
R317	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R318	ERJ3GEYJ394	Carbon	390K ohms 1/16W
R319	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R320	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R321	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R322	ERJ3GEYJ752	Carbon	7.5K ohms 1/16W
R323	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R324	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R325	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R326	ERJ3GEYJ562	Carbon	5.6K ohms 1/16W
R327	ERJ3GEYJ751	Carbon	750 ohms 1/16W
R328	ERJ3GEYJ752	Carbon	7.5K ohms 1/16W
R329	ERJ3GEYJ562	Carbon	5.6K ohms 1/16W
R330	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R331,332	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R333	ERJ3GEYJ822	Carbon	8.2K ohms 1/16W
R334	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R335,336	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R337	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R338	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R339	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R340	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R341	ERJ3GEYJ330	Carbon	33 ohms 1/16W
R342,343	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R344	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R345	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R346	ERJ3GEYJ153	Carbon	15K ohms 1/16W
VR101	YWST3TA101	Variable Resistor	100 ohms
VR102	YWST3TA502	Variable Resistor	5K ohms
VR201	YWST3TA101	Variable Resistor	100 ohms
VR202	YWST3TA502	Variable Resistor	5K ohms
VR301	YWST3TA101	Variable Resistor	100 ohms
VR302	YWST3TA502	Variable Resistor	500 ohms
C1	ECEV1CV100	Electrolytic	10 µF 16V
C2	YWRJ310V471M	Electrolytic	470 µF 10V
C3	ECEV1CV100	Electrolytic	10 µF 16V
C4	ECEV0JV101	Electrolytic	100 µF 6.3V
C5	ECEV1CV100	Electrolytic	10 µF 16V
C101	YW5CH180J5VB	Ceramic	18 pF
C102	YW5CH150J5VB	Ceramic	15 pF
C103	YW5CH180J5VB	Ceramic	18 pF
C104	YW5F104Z2VB	Ceramic	0.1 µF
C105	ECEV1CV100	Electrolytic	10 µF 16V
C106	YWSK1E155MRB	Electrolytic	1.5 µF 25V
C107	YW5CH390J5VB	Ceramic	39 pF
C108	ECEV1CV100	Electrolytic	10 µF 16V
C109	YW5F104Z2VB	Ceramic	0.1 µF
C110	YW5CH220J5VB	Ceramic	22 pF
C111	ECEV1CV470	Electrolytic	47 µF 16V
C112	YW5CH220J5VB	Ceramic	22 pF
C114	ECEV1CV100	Electrolytic	10 µF 16V
C115,116	YW5F104Z2VB	Ceramic	0.1 µF
C118	YW5CH220J5VB	Ceramic	22 pF
C119	ECEV1EV330	Electrolytic	33 µF 25V
C201	YW5CH180J5VB	Ceramic	18 pF
C202	YW5CH150J5VB	Ceramic	15 pF
C203	YW5CH180J5VB	Ceramic	18 pF
C204	YW5F104Z2VB	Ceramic	0.1 µF
C205	ECEV1CV100	Electrolytic	10 µF 16V
C206	YWSK1E155MRB	Electrolytic	1.5 µF 25V
C207	YW5CH390J5VB	Ceramic	39 pF
C208	ECEV1CV100	Electrolytic	10 µF 16V
C209	YW5F104Z2VB	Ceramic	0.1 µF
C210	YW5CH220J5VB	Ceramic	22 pF
C211	ECEV1CV470	Electrolytic	47 µF 16V
C212	YW5CH220J5VB	Ceramic	22 pF
C214	ECEV1CV100	Electrolytic	10 µF 16V
C215,216	YW5F104Z2VB	Ceramic	0.1 µF
C218	YW5CH220J5VB	Ceramic	22 pF
C219	ECEV1EV330	Electrolytic	33 µF 25V
C301	YW5CH180J5VB	Ceramic	18 pF
C302	YW5CH150J5VB	Ceramic	15 pF
C303	YW5CH180J5VB	Ceramic	18 pF
C304	YW5F104Z2VB	Ceramic	0.1 µF
C305	ECEV1CV100	Electrolytic	10 µF 16V
C306	YWSK1E155MRB	Electrolytic	1.5 µF 25V
C307	YW5CH390J5VB	Ceramic	39 pF
C308	ECEV1CV100	Electrolytic	10 µF 16V
C309	YW5F104Z2VB	Ceramic	0.1 µF
C310	YW5CH220J5VB	Ceramic	22 pF
C311	ECEV1CV470	Electrolytic	47 µF 16V
C312	YW5CH220J5VB	Ceramic	22 pF
C314	ECEV1CV100	Electrolytic	10 µF 10V
C315,316	YW5F104Z2VB	Ceramic	0.1 µF
C318	YW5CH220J5VB	Ceramic	22 pF
C319	ECEV1EV330	Electrolytic	33 µF 25V
CT101,201	TZB04R500BAT	Trimmer Capacitor	
CT301	TZB04R500BAT	Trimmer Capacitor	
L101,201	YWNL32T2R7K	Coil	2.7 µH
L301	YWNL32T2R7K	Coil	2.7 µH
CF101	YWCY4S567	Filter	
CF102	YWCY4T566	Filter	
CF201	YWCY4S567	Filter	
CF202	YWCY4T566	Filter	
CF301	YWCY4S567	Filter	
CF302	YWCY4T566	Filter	
CN1	10PED4T1PN1	10-pin Connector	
CN2	YWE021200000	2-pin Connector	
CN3	YWE021200001	Connector	
CN101	YWE021200002	2-pin Connector	
TP1,101	YWRCT2125TPV	Test Point	
TP102,201	YWRCT2125TPV	Test Point	
TP202,301	YWRCT2125TPV	Test Point	
TP302	YWRCT2125TPV	Test Point	
M80	YWV2HA1076A3	Shield Parts	
M81	YWV6GA0157A4	Plate	

PRE PROCESS BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB4 (RTL)	YWVKBF500E2A	Printed Circuit Board Assy
IC1	NJM2902M	IC
IC2	NJM2904M	IC
IC3	YWUPC4064G2	IC
IC4	YWUPD4053BG	IC
IC5	YWUPD4538BG	IC
IC6	YWUPD4528BG	IC
IC7	NJM2904M	IC
IC8	NJM2902M	IC
IC9	YWUPD4050BG	IC
IC10,12	YWUPD4053BG	IC
IC101	YWUPD4053BG	IC
IC102	YWUPC4062G2	IC
IC103	AN90B01S	IC
IC104,105	YWUPD4053BG	IC
IC106	YWUPC4062G2	IC
IC301	YWUPD4053BG	IC
IC302	YWUPC4062G2	IC
IC303	AN90B01S	IC
IC304,305	YWUPD4053BG	IC
IC306	YWUPC4062G2	IC
IC501	YWUPD4053BG	IC
IC502	YWUPC4062G2	IC
IC503	AN90B01S	IC
IC504,505	YWUPD4053BG	IC
IC506	YWUPC4062G2	IC
Q1	2SB766-RS	Transistor
Q2	2SD874A-RS	Transistor
Q3	2SB766-RS	Transistor
Q4-6	2SB1218-QRS	Transistor
Q7	2SK662-PQR	Fet
Q8	UMZ1	Transistor
Q9	2SK662-PQR	Fet
Q10-12	2SD1819-QRS	Transistor
Q13	2SB766-RS	Transistor
Q14,16	2SD1819-QRS	Transistor
Q101,102	2SC3931-CD	Transistor
Q104	2SC3931-CD	Transistor
Q105	2SD1819-QRS	Transistor
Q106	2SC3931-CD	Transistor
Q107	UMZ1	Transistor
Q110	UMX2	Transistor
Q111,112	2SD1823-RS	Transistor
Q113	XN6435	Transistor
Q116	2SK662-PQR	Fet
Q117	2SC3931-CD	Transistor
Q118	UMZ1	Transistor
Q120-125	XN6435	Transistor
Q126	2SC3931-CD	Transistor
Q127	XN6435	Transistor
Q128	2SC3931-CD	Transistor
Q129	2SD1819-QRS	Transistor
Q130	UMX2	Transistor
Q131	2SB1218-QRS	Transistor
Q132	UMZ1	Transistor
Q301,302	2SC3931-CD	Transistor
Q304	2SC3931-CD	Transistor
Q305	2SD1819-QRS	Transistor
Q306	2SC3931-CD	Transistor
Q307	UMZ1	Transistor
Q310	UMX2	Transistor
Q311,312	2SD1823-RS	Transistor
Q313	XN6435	Transistor
Q316	2SK662-PQR	FET
Q317	2SC3931-CD	Transistor
Q318	UMZ1	Transistor
Q320-325	XN6435	Transistor
Q326	2SC3931-CD	Transistor
Q327	XN6435	Transistor
Q328	2SC3931-CD	Transistor
Q329	2SD1819-QRS	Transistor
Q330	UMX2	Transistor
Q331	2SB1218-QRS	Transistor
Q332	UMZ1	Transistor
Q501,502	2SC3931-CD	Transistor
Q504	2SC3931-CD	Transistor
Q505	2SD1819-QRS	Transistor
Q506	2SC3931-CD	Transistor
Q507	UMZ1	Transistor
Q510	UMX2	Transistor
Q511,512	2SD1823-RS	Transistor
Q513	XN6435	Transistor
Q516	2SK662-PQR	FET
Q517	2SC3931-CD	Transistor
Q518	UMZ1	Transistor
Q520-525	XN6435	Transistor
Q526	2SC3931-CD	Transistor
Q527	XN6435	Transistor
Q528	2SC3931-CD	Transistor
Q529	2SD1819-QRS	Transistor
Q530	UMX2	Transistor
Q531	2SB1218-QRS	Transistor
Q532	UMZ1	Transistor
D1,2	MA141K	Diode
D101,301	MA3051	Diode
D501	MA3051	Diode
R1-3	YWR0816R473D	Metal 47K ohms 1/16W
R4	YWR0816R513D	Metal 51K ohms 1/16W
R5	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R6	ERJ3GEYJ101	Carbon 100 ohms 1/16W
R7-9	YWR0816R473D	Metal 47K ohms 1/16W
R10	YWR0816R393D	Metal 39K ohms 1/16W
R11	ERJ3GEYJ101	Carbon 100 ohms 1/16W
R12	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R13-15	YWR0816R473D	Metal 47K ohms 1/16W
R16	YWR0816R513D	Metal 51K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION
R17	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R18	ERJ3GEYJ101	Carbon 100 ohms 1/16W
R19	YWR0816R473D	Metal 47K ohms 1/16W
R20	YWR0816P562D	Metal 5.6K ohms 1/16W
R21	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R22	ERJ3GEYJ332	Carbon 3.3K ohms 1/16W
R23	ERJ3GEYJ474	Carbon 470K ohms 1/16W
R24	ERJ3GEYJ824	Carbon 820K ohms 1/16W
R25	ERJ3GEYJ243	Carbon 24K ohms 1/16WF
R26	ERJ3GEYJ473	Carbon 47K ohms 1/16W
R27	YWR0816R473D	Metal 47K ohms 1/16W
R28	YWR0816R513D	Metal 51K ohms 1/16W
R29,30	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R31	ERJ3GEYJ101	Carbon 100 ohms 1/16W
R32	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R33	ERJ3GEYJ682	Carbon 6.8K ohms 1/16W
R34	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R35	ERJ3GEYJ101	Carbon 100 ohms 1/16W
R36	ERJ3GEYJ333	Carbon 33K ohms 1/16W
R37	ERJ3GEYJ104	Carbon 100K ohms 1/16W
R38	ERJ3GEYJ682	Carbon 6.8K ohms 1/16W
R39	ERJ3GEYJ101	Carbon 100 ohms 1/16W
R40	ERJ3GEYJ104	Carbon 100K ohms 1/16W
R41	ERJ3GEYJ333	Carbon 33K ohms 1/16W
R42	ERJ3GEYJ104	Carbon 100K ohms 1/16W
R43	ERJ3GEYJ101	Carbon 100 ohms 1/16W
R44	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R45	ERJ3GEYJ334	Carbon 330K ohms 1/16W
R46	ERJ3GEYJ473	Carbon 47K ohms 1/16W
R47	ERJ3GEYJ223	Carbon 22K ohms 1/16W
R48	ERJ3GEYJ243	Carbon 24K ohms 1/16WF
R49	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R50	ERJ3GEYJ182	Carbon 1.8K ohms 1/16W
R51,52	ERJ3GEYJ333	Carbon 33K ohms 1/16W
R53	ERJ3GEYJ104	Carbon 100K ohms 1/16W
R54	ERJ3GEYJ623	Carbon 62K ohms 1/16W
R55	ERJ3GEYJ273	Carbon 27K ohms 1/16W
R56	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R57	ERJ3GEYJ332	Carbon 3.3K ohms 1/16W
R58	ERJ3GEYJ223	Carbon 22K ohms 1/16W
R59	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R60	ERJ3GEYJ101	Carbon 100 ohms 1/16W
R61	ERJ3GEYJ104	Carbon 100K ohms 1/16W
R62	ERJ3GEYJ333	Carbon 33K ohms 1/16W
R63	ERJ3GEYJ332	Carbon 3.3K ohms 1/16W
R64	ERJ3GEYJ682	Carbon 6.8K ohms 1/16W
R65	ERJ3GEYJ104	Carbon 100K ohms 1/16W
R66	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R67	ERJ3GEYJ333	Carbon 33K ohms 1/16W
R68	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R69	ERJ3GEYJ222	Carbon 2.2K ohms 1/16W
R70	ERJ3GEYJ472	Carbon 4.7K ohms 1/16W
R71	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R72	YWR0816P472D	Metal 4.7K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION
R73	YWR0816P751D	Metal 750 ohms 1/16W
R74	YWR0816P102D	Metal 1K ohms 1/16W
R75	YWR0816P121D	Metal 120 ohms 1/16W
R76	YWR0816P331D	Metal 330 ohms 1/16W
R77	YWR0816Q470D	Metal 47 ohms 1/16W
R78	YWR0816P221D	Metal 220 ohms 1/16W
R79,80	YWR0816Q470D	Metal 47 ohms 1/16W
R81	YWR0816Q150D	Metal 15 ohms 1/16W
R82	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R83	ERJ3GEYJ473	Carbon 47K ohms 1/16W
R84	ERJ3GEYJ104	Carbon 100K ohms 1/16W
R85	ERJ3GEYJ333	Carbon 33K ohms 1/16W
R86	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R87,88	ERJ3GEYJ512	Carbon 5.1K ohms 1/16W
R89	ERJ3GEYJ334	Carbon 330K ohms 1/16W
R90	ERJ3GEYJ224	Carbon 220K ohms 1/16W
R91	ERJ3GEYJ334	Carbon 330K ohms 1/16W
R92	ERJ3GEYJ224	Carbon 220K ohms 1/16W
R93	ERJ3GEYJ244	Carbon 240K ohms 1/6W
R94	ERJ3GEYJ473	Carbon 47K ohms 1/16W
R95	ERJ3GEYJ104	Carbon 100K ohms 1/16W
R99,100	ERJ3GEY0R00	Carbon 0 ohms 1/16W
R101	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R102	ERJ3GEYJ101	Carbon 100 ohms 1/16W
R104,105	YWR0816P272D	Metal 2.7K ohms 1/16W
R106	YWR0816P331D	Metal 330 ohms 1/16W
R107	YWR0816P332D	Metal 3.3K ohms 1/16W
R108	ERJ3GEYJ101	Carbon 100 ohms 1/16W
R110	ERJ3GEYJ333	Carbon 33K ohms 1/16W
R114	ERJ3GEYJ332	Carbon 3.3K ohms 1/16W
R116	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R117	ERJ3GEYJ222	Carbon 2.2K ohms 1/16W
R118	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R119	ERJ3GEYJ223	Carbon 22K ohms 1/16W
R120	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R122	ERJ3GEYJ683	Carbon 68K ohms 1/16W
R123	ERJ3GEYJ223	Carbon 22K ohms 1/16W
R127	ERJ3GEYJ101	Carbon 100 ohms 1/16W
R128	ERJ3GEYJ332	Carbon 3.3K ohms 1/16W
R131	YWR0816P222D	Metal 2.2K ohms 1/16W
R132	YWR0816P472D	Metal 4.7K ohms 1/16W
R133	YWR0816P153D	Metal 15K ohms 1/16W
R134,136	YWR0816P102D	Metal 1K ohms 1/16W
R137	YWR0816P103D	Metal 10K ohms 1/16W
R138,139	ERJ3GEYJ101	Carbon 100 ohms 1/16W
R142	YWR0816P102D	Metal 1K ohms 1/16W
R143-146	YWR0816P101D	Metal 100 ohms 1/16W
R147	YWR0816P302D	Metal 3K ohms 1/16W
R148	YWR0816P202D	Metal 2K ohms 1/16W
R149	YWR0816P112D	Metal 1.1K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R150,151	YWR0816P331D	Metal	330 ohms 1/16W
R152	ERJ3GEYJ334	Carbon	330K 1/16W
R153	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R154	ERJ3GEYJ334	Carbon	330K ohms 1/16W
R155	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R156	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R157	YWR0816R363D	Metal	36K ohms 1/16W
R158	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R159	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R160	YWR0816P681D	Metal	680 ohms 1/16W
R161	YWR0816P221D	Metal	220 ohms 1/16W
R162	YWR0816P681D	Metal	680 ohms 1/16W
R163	YWR0816P332D	Metal	3.3K ohms 1/16W
R164	YWR0816P472D	Metal	4.7K ohms 1/16W
R165	YWR0816P103D	Metal	10K ohms 1/16W
R166,167	YWR0816P102D	Metal	1K ohms 1/16W
R169	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R171	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R172	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R173	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R174	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R175	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R176-179	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R180	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R181	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R184-187	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R188	YWR0816P103D	Metal	10K ohms 1/16W
R189	YWR0816P223D	Metal	22K ohms 1/16W
R190	YWR0816P472D	Metal	4.7K ohms 1/16W
R191	YWR0816P331D	Metal	330 ohms 1/16W
R192	YWR0816R683D	Metal	68K ohms 1/16W
R193	YWR0816P103D	Metal	10K ohms 1/16W
R194	YWR0816R683D	Metal	68K ohms 1/16W
R195	YWR0816P202D	Metal	2K ohms 1/16W
R196,197	YWR0816P103D	Metal	10K ohms 1/16W
R198,199	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R200	YWR0816P202D	Metal	2K ohms 1/16W
R201	YWR0816P152D	Metal	1.5K ohms 1/16W
R202,203	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R204	YWR0816P102D	Metal	1K ohms 1/16W
R205,206	YWR0816P471D	Metal	470 ohms 1/16W
R207	YWR0816P152D	Metal	1.5K ohms 1/16W
R208	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R209,210	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R211	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R214	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R215	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R217	YWR0816P472D	Metal	4.7K ohms 1/16W
R218	YWR0816P332D	Metal	3.3K ohms 1/16W
R219	YWR0816P752D	Metal	7.5K ohms 1/16W
R220	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R222	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R223	YWR0816P223D	Metal	22K ohms 1/16W
R224	ERJ3GEYJ114	Carbon	110K ohms 1/16W
R225	ERJ3GEYJ124	Carbon	120K ohms 1/16W
R227	YWR0816P221D	Metal	220 ohms 1/16W
R301	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R302	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R304,305	YWR0816P272D	Metal	2.7K ohms 1/16W
R306	YWR0816P331D	Metal	330 ohms 1/16W
R307	YWR0816P332D	Metal	3.3K ohms 1/16W
R308	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R310	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R314	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R316	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R317	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R318	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R319	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R320	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R322	ERJ3GEYJ683	Carbon	68K ohms 1/16W
R323	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R327	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R328	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R331	YWR0816P222D	Metal	2.2K ohms 1/16W
R332	YWR0816P472D	Metal	4.7K ohms 1/16W
R333	YWR0816P153D	Metal	15K ohms 1/16W
R334	YWR0816P102D	Metal	1K ohms 1/16W
R336	YWR0816P202D	Metal	2K ohms 1/16W
R337	YWR0816P103D	Metal	10K ohms 1/16W
R338,339	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R342	YWR0816P102D	Metal	1K ohms 1/16W
R343-346	YWR0816P101D	Metal	100 ohms 1/16W
R347	YWR0816P302D	Metal	3K ohms 1/16W
R348	YWR0816P202D	Metal	2K ohms 1/16W
R349	YWR0816P112D	Metal	1.1K ohms 1/16W
R350,351	YWR0816P331D	Metal	330 ohms 1/16W
R352	ERJ3GEYJ334	Carbon	330K 1/16W
R353	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R354	ERJ3GEYJ334	Carbon	330K 1/16W
R355	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R356	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R357	YWR0816R363D	Metal	36K ohms 1/16W
R358	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R359	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R360	YWR0816P681D	Metal	680 ohms 1/16W
R361	YWR0816P221D	Metal	220 ohms 1/16W
R362	YWR0816P681D	Metal	680 ohms 1/16W
R363	YWR0816P332D	Metal	3.3K ohms 1/16W
R364	YWR0816P472D	Metal	4.7K ohms 1/16W
R365	YWR0816P103D	Metal	10K ohms 1/16W
R366,367	YWR0816P102D	Metal	1K ohms 1/16W
R369	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R371	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R372	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R373	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R374	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R375	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R376-379	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R380	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R381	ERJ3GEYJ331	Carbon	330 ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R384-387	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R388	YWR0816P103D	Metal	10K ohms 1/16W
R389	YWR0816P223D	Metal	22K ohms 1/16W
R390	YWR0816P472D	Metal	4.7K ohms 1/16W
R391	YWR0816P331D	Metal	330 ohms 1/16W
R392	YWR0816R683D	Metal	68K ohms 1/16W
R393	YWR0816P103D	Metal	10K ohms 1/16W
R394	YWR0816R683D	Metal	68K ohms 1/16W
R395	YWR0816P202D	Metal	2K ohms 1/16W
R396,397	YWR0816P103D	Metal	10K ohms 1/16W
R398,399	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R400	YWR0816P202D	Metal	2K ohms 1/16W
R401	YWR0816P152D	Metal	1.5K ohms 1/16W
R402,403	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R404	YWR0816P102D	Metal	1K ohms 1/16W
R405,406	YWR0816P471D	Metal	470 ohms 1/16W
R407	YWR0816P152D	Metal	1.5K ohms 1/16W
R408	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R409,410	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R411	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R414	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R415	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R417	YWR0816P472D	Metal	4.7K ohms 1/16W
R418	YWR0816P332D	Metal	3.3K ohms 1/16W
R419	YWR0816P752D	Metal	7.5K ohms 1/16W
R420	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R422	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R423	YWR0816P223D	Metal	22K ohms 1/16W
R424	ERJ3GEYJ114	Carbon	110K ohms 1/16W
R425	ERJ3GEYJ124	Carbon	120K ohms 1/16W
R427	YWR0816P221D	Metal	220 ohms 1/16W
R501	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R502	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R504,505	YWR0816P272D	Metal	2.7K ohms 1/16W
R506	YWR0816P101D	Metal	100 ohms 1/16W
R507	YWR0816P332D	Metal	3.3K ohms 1/16W
R508	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R510	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R514	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R516	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R517	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R518	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R519	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R520	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R522	ERJ3GEYJ683	Carbon	68K ohms 1/16W
R523	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R527	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R528	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R531	YWR0816P222D	Metal	2.2K ohms 1/16W
R532	YWR0816P472D	Metal	4.7K ohms 1/16W
R533	YWR0816P153D	Metal	15K ohms 1/16W
R534,536	YWR0816P102D	Metal	1K ohms 1/16W
R537	YWR0816P103D	Metal	10K ohms 1/16W
R538,539	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R542	YWR0816P102D	Metal	1K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R543-546	YWR0816P101D	Metal	100 ohms 1/16W
R547	YWR0816P302D	Metal	3K ohms 1/16W
R548	YWR0816P202D	Metal	2K ohms 1/16W
R549	YWR0816P112D	Metal	1.1K ohms 1/16W
R550,551	YWR0816P331D	Metal	330 ohms 1/16W
R552	ERJ3GEYJ334	Carbon	330K 1/16W
R553	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R554	ERJ3GEYJ334	Carbon	330K 1/16W
R555	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R556	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R557	YWR0816R363D	Metal	36K ohms 1/16W
R558	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R559	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R560	YWR0816P681D	Metal	680 ohms 1/16W
R561	YWR0816P221D	Metal	220 ohms 1/16W
R562	YWR0816P681D	Metal	680 ohms 1/16W
R563	YWR0816P332D	Metal	3.3K ohms 1/16W
R564	YWR0816P472D	Metal	4.7K ohms 1/16W
R565	YWR0816P103D	Metal	10K ohms 1/16W
R566,567	YWR0816P102D	Metal	1K ohms 1/16W
R569	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R571	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R572	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R573	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R574	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R575	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R576-579	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R580	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R581	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R584-587	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R588	YWR0816P103D	Metal	10K ohms 1/16W
R589	YWR0816P223D	Metal	22K ohms 1/16W
R590	YWR0816P472D	Metal	4.7K ohms 1/16W
R591	YWR0816P331D	Metal	330 ohms 1/16W
R592	YWR0816R683D	Metal	68K ohms 1/16W
R593	YWR0816P103D	Metal	10K ohms 1/16W
R594	YWR0816R683D	Metal	68K ohms 1/16W
R595	YWR0816P202D	Metal	2K ohms 1/16W
R596,597	YWR0816P103D	Metal	10K ohms 1/16W
R598,599	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R600	YWR0816P202D	Metal	2K ohms 1/16W
R601	YWR0816P152D	Metal	1.5K ohms 1/16W
R602,603	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R604	YWR0816P102D	Metal	1K ohms 1/16W
R605,606	YWR0816P471D	Metal	470 ohms 1/16W
R607	YWR0816P152D	Metal	1.5K ohms 1/16W
R608	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R609,610	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R611	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R614	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R615	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R617	YWR0816P472D	Metal	4.7K ohms 1/16W
R618	YWR0816P332D	Metal	3.3K ohms 1/16W
R619	YWR0816P752D	Metal	7.5K ohms 1/16W
R620	ERJ3GEYJ103	Carbon	10K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R622	ERJ3GEYJ471	Carbon	470 ohms 1/16W
R623	YWR0816P223D	Metal	22K ohms 1/16W
R624	ERJ3GEYJ114	Carbon	110K ohms 1/16W
R625	ERJ3GEYJ124	Carbon	120K ohms 1/16W
R627	YWR0816P221D	Metal	220 ohms 1/16W
R701-703	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R704	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R705	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R706	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R707	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R708	ERJ3GEYJ224	Carbon	220K ohms 1/16W
R709	ERJ3GEYJ104	Carbon	100K ohms 1/16W
VR1	EVM7JSW30B25	Variable Resistor	200K ohms
VR2	EVM7JGA30B14	Variable Resistor	10K ohms
VR101	YWRH03AVAJ3W	Variable Resistor	2K ohms
VR104	EVM7JGA30B14	Variable Resistor	10K ohms
VR105	EVM7JGA30B13	Variable Resistor	1K ohms
VR106	YWRH03AVA13W	Variable Resistor	1K ohms
VR107	EVM7JGA30B13	Variable Resistor	1K ohms
VR108-110	YWRH03AVA15W	Variable Resistor	100K ohms
VR111,112	EVM7JGA30B54	Variable Resistor	50K ohms
VR301	YWRH03AVAJ3W	Variable Resistor	2K ohms
VR304	EVM7JGA30B14	Variable Resistor	10K ohms
VR305	EVM7JGA30B13	Variable Resistor	1K ohms
VR306	YWRH03AVA13W	Variable Resistor	1K ohms
VR307	EVM7JGA30B13	Variable Resistor	1K ohms
VR308-310	YWRH03AVA15W	Variable Resistor	100K ohms
VR311,312	EVM7JGA30B54	Variable Resistor	50K ohms
VR501	YWRH03AVA13W	Variable Resistor	1K ohms
VR504	EVM7JGA30B14	Variable Resistor	10K ohms
VR505	EVM7JGA30B13	Variable Resistor	1K ohms
VR506	YWRH03AVA13W	Variable Resistor	1K ohms
VR507	EVM7JGA30B13	Variable Resistor	1K ohms
VR508-510	YWRH03AVA15W	Variable Resistor	100K ohms
VR511,512	EVM7JGA30B54	Variable Resistor	50K ohms
C1	ECEV1CV100	Electrolytic	10 µF 16V
C2	ECEV1CV470	Electrolytic	47 µF 16V
C3	ECEV1CV100	Electrolytic	10 µF 16V
C4	ECEV0JV101	Electrolytic	100 µF 6.3V
C5	ECEV1CV100	Electrolytic	10 µF 16V
C6,7	ECEV0JV101	Electrolytic	100 µF 6.3V
C8,9	YW5F104Z2VB	Ceramic	0.1 µF
C10,11	YWC16JBH103K	Ceramic	0.01 µF
C12,13	YWC16SLH102J	Ceramic	1000 pF
C14	ECEV0JV101	Electrolytic	100 µF 6.3V
C16,18	YW5F104Z2VB	Ceramic	0.1 µF
C19	YW5F104Z2VB	Ceramic	0.1 µF
C20	YW5F473Z2VB	Ceramic	0.047 µF
C21	ECEV1CV100	Electrolytic	10 µF 16V
C22-24	YW5F104Z2VB	Ceramic	0.1 µF
C25-28	ECEV1CV100	Electrolytic	10 µF 16V
C29,30	YW5F104Z2VB	Ceramic	0.1 µF
C31	YW5CH101J5VB	Ceramic	100 pF
C33	YW5CH470J5VB	Ceramic	47 pF
C34,35	ECEV1HV010	Electrolytic	1 µF 50V

REF.NO.	PART NO.	DESCRIPTION	
C36,37	YW5F104Z2VB	Ceramic	0.1 µF
C38	ECEV1EV100	Electrolytic	10 µF 25V
C101,102	ECEV1CV100	Electrolytic	10 µF 16V
C104	ECEV1CV100	Electrolytic	10 µF 16V
C106	YWSK1C105KRA	Electrolytic	1 µF 16V
C107	YW5CH150J5VB	Ceramic	15 pF
C108,109	ECEV1CV100	Electrolytic	10 µF 16V
C113	ECEV1CV100	Electrolytic	10 µF 16V
C114,115	YWSK1C105KRA	Electrolytic	1 µF 16V
C116	YWSK1V224KRA	Electrolytic	0.22 µF 35V
C117	ECEV1CV100	Electrolytic	10 µF 16V
C118	ECEV0JV101	Electrolytic	100 µF 6.3V
C119-122	YW5F104Z2VB	Ceramic	0.1 µF
C123	YW5CH270J5VB	Ceramic	27 pF
C124,125	YWSK1C105KRA	Electrolytic	1 µF 16V
C126	ECEV1CV470	Electrolytic	47 µF 16V
C127	ECEV0GV470	Electrolytic	47 µF 4V
C128,129	YW5F104Z2VB	Ceramic	0.1 µF
C132	YW5CH020D5VB	Ceramic	2 pF
C134	ECEV1CV100	Electrolytic	10 µF 16V
C136-139	YW5F104Z2VB	Ceramic	0.1 µF
C141	YW5CH100J5VB	Ceramic	10 pF
C301,302	ECEV1CV100	Electrolytic	10 µF 16V
C304	ECEV1CV100	Electrolytic	10 µF 16V
C306	YWSK1C105KRA	Electrolytic	1 µF 16V
C307	YW5CH150J5VB	Ceramic	15 pF
C308,309	ECEV1CV100	Electrolytic	10 µF 16V
C313	ECEV1CV100	Electrolytic	10 µF 16V
C314,315	YWSK1C105KRA	Electrolytic	1 µF 16V
C316	YWSK1V224KRA	Electrolytic	0.22 µF 35V
C317	ECEV1CV100	Electrolytic	10 µF 16V
C318	ECEV0JV101	Electrolytic	100 µF 6.3V
C319-322	YW5F104Z2VB	Ceramic	0.1 µF
C323	YW5CH270J5VB	Ceramic	27 pF
C324,325	YWSK1C105KRA	Electrolytic	1 µF 16V
C326	ECEV1CV470	Electrolytic	47 µF 16V
C327	ECEV0GV470	Electrolytic	47 µF 4V
C328,329	YW5F104Z2VB	Ceramic	0.1 µF
C332	YW5CH020D5VB	Ceramic	2 pF
C334	ECEV1CV100	Electrolytic	10 µF 16V
C336-339	YW5F104Z2VB	Ceramic	0.1 F
C341	YW5CH100J5VB	Ceramic	10 pF
C501,502	ECEV1CV100	Electrolytic	10 µF 16V
C503	YW5CH100J5VB	Ceramic	10 pF
C504	ECEV1CV100	Electrolytic	10 µF 16V
C506	YWSK1C105KRA	Electrolytic	1 µF 16V
C507	YW5CH150J5VB	Ceramic	15 pF
C508,509	ECEV1CV100	Electrolytic	10 µF 16V
C513	ECEV1CV100	Electrolytic	10 µF 16V
C514,515	YWSK1C105KRA	Electrolytic	1 µF 16V
C516	YWSK1V224KRA	Electrolytic	0.22 µF 35V
C517	ECEV1CV100	Electrolytic	10 µF 16V
C518	ECEV0JV101	Electrolytic	100 µF 6.3V
C519-522	YW5F104Z2VB	Ceramic	0.1 µF
C523	YW5CH270J5VB	Ceramic	27 pF

REF.NO.	PART NO.	DESCRIPTION
C524,525	YWSK1C105KRA	Electrolytic 1 μF 16V
C526	ECEV1CV470	Electrolytic 47 μF 16V
C527	ECEV0GV470	Electrolytic 47 μF 4V
C528,529	YW5F104Z2VB	Ceramic 0.1 μF
C532	YW5CH020D5VB	Ceramic 2 pF
C534	ECEV1CV100	Electrolytic 10 μF 16V
C536-539	YW5F104Z2VB	Ceramic 0.1 μF
C541	YW5CH100J5VB	Ceramic 10 pF
CT101,301	YWCDX20RF	Trimmer Capacitor 20 PF
CT501	YWCDX20RF	Trimmer Capacitor 20 PF
CN1	FCN215Q050GA	50-pin Connector
TP1,101	YWRCT2125TPV	Test Point
TP102-106	YWRCT2125TPV	Test Point
TP301-306	YWRCT2125TPV	Test Point
TP501-506	YWRCT2125TPV	Test Point

SYNC/ENCODER BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB5 (RTL)	YWVKCF500E2A	Printed Circuit Board Assy
IC1	YWLM1881M	IC
IC2	UPD74HC4049G	IC
IC3	YWUPC4062G2	IC
IC4	YWMB87075D	LSI
IC5	YWTC4S81FR	IC
IC7	YWTC7S00FR	IC
IC8	YWTC4S66FR	IC
IC20,22	NJM2904M	IC
IC23	SN74LS221S	IC
IC24-27	YWTC4S66FR	IC
IC30	YWUPD74HC02G	IC
IC32	YWUPD4053BG	IC
IC33	YWTC4S66FR	IC
IC34	YWCX20095A	IC
IC35	UPD74HC4053G	IC
IC36,37	AN614	IC
IC38	YWUPD4053BG	IC
IC42	YWNJM2248M	IC
IC44	YWTC4S66FR	IC
IC45	YWTC7S32FR	IC
IC50	YWUPC4062G2	IC
IC51	YWTC4S66FR	IC
Q1	2SC3931-CD	Transistor
Q2	2SB1218-QRS	Transistor
Q3	2SC3931-CD	Transistor
Q4,5	2SB1218-QRS	Transistor
Q6	2SC3931-CD	Transistor
Q7	2SB1218-QRS	Transistor
Q8,9	2SD1819-QRS	Transistor
Q10	UMT2	Transistor

REF.NO.	PART NO.	DESCRIPTION
Q12-14	2SB766-RS	Transistor
Q15,16	2SD1819-QRS	Transistor
Q17	2SB1218-QRS	Transistor
Q18,22	2SD1819-QRS	Transistor
Q38	2SB1218-QRS	Transistor
Q39	2SD1819-QRS	Transistor
Q40	2SB1218-QRS	Transistor
Q41,42	2SD1819-QRS	Transistor
Q43,44	2SC3931-CD	Transistor
Q45-47	2SD1819-QRS	Transistor
Q48-52	2SC3931-CD	Transistor
Q53	2SA1532-CD	Transistor
Q54,55	2SC3931-CD	Transistor
Q56-59	2SD1819-QRS	Transistor
Q60	2SC3931-CD	Transistor
Q61-64	2SD1819-QRS	Transistor
Q66,67	2SD1819-QRS	Transistor
Q68	2SC3931-CD	Transistor
Q69	2SD1819-QRS	Transistor
Q70	2SB1218-QRS	Transistor
Q71-74	2SC3931-CD	Transistor
Q75	2SD1819-QRS	Transistor
Q76	2SB1218-QRS	Transistor
Q77	2SD1819-QRS	Transistor
Q78	2SB1218-QRS	Transistor
Q79,80	2SC3931-CD	Transistor
Q81	2SD1819-QRS	Transistor
Q82	2SB1218-QRS	Transistor
Q83,84	2SC3931-CD	Transistor
Q85	2SD1819-QRS	Transistor
Q86	2SB1218-QRS	Transistor
Q87-89	2SC3931-CD	Transistor
Q91	2SC3931-CD	Transistor
Q100	2SB1218-QRS	Transistor
Q101	2SD1819-QRS	Transistor
D1	MA141K	Diode
D2	YWFC54M5	Diode
D3	MA141K	Diode
D4	YWFC54M5	Diode
D9	MA141K	Diode
TH47	L311F102J452	Thermistor
R1,2	ERJ3GEYJ223	Carbon 22K ohms 1/16W
R3,4	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R5	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R6	ERJ3GEYJ272	Carbon 2.7K ohms 1/16W
R7	YWR0816P121D	Metal 120 ohms 1/16W
R8	YWR0816P562D	Metal 5.6K ohms 1/16W
R9	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R10	ERJ3GEYJ123	Carbon 12K ohms 1/16W
R11	ERJ3GEYJ183	Carbon 18K ohms 1/16W
R12	ERJ3GEYJ332	Carbon 3.3K ohms 1/16W
R13	ERJ3GEYJ152	Carbon 1.5K ohms 1/16W
R14	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R15	ERJ3GEYJ561	Carbon 560 ohms 1/16W
R16	ERJ3GEYJ223	Carbon 22K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R17	ERJ3GEYJ272	Carbon	2.7K ohms 1/16W
R18	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R19	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R20	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R21	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R22	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R23	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R24	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R25	YWR0816P103D	Metal	10K ohms 1/16W
R26	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R27	YWR0816P393D	Metal	39K ohms 1/16W
R28	YWR0816R224D	Metal	220K ohms 1/16W
R33	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R35,36	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R37	YWR0816P681D	Metal	680 ohms 1/16W
R38	YWR0816P103D	Metal	10K ohms 1/16W
R39	YWR0816P101D	Metal	100 ohms 1/16W
R40	YWR0816P681D	Metal	680 ohms 1/16W
R41	YWR0816P103D	Metal	10K ohms 1/16W
R42	YWR0816P101D	Metal	100 ohms 1/16W
R43,44	ERJ3GEYJ100	Carbon	10 ohms 1/16W
R45	ERJ3GEYJ241	Carbon	240 ohms 1/16W
R46	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R48	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R49	ERJ3GEYJ564	Carbon	560K ohms 1/16W
R50	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R51	ERJ3GEYJ683	Carbon	68K ohms 1/16W
R52	ERJ3GEYJ753	Carbon	75K ohms 1/16W
R53	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R65	YWR0816R473D	Metal	47K ohms 1/16W
R66	YWR0816R513D	Metal	51K ohms 1/16W
R67,68	YWR0816R473D	Metal	47K ohms 1/16W
R69	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R70	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R85	ERJ3GEYJ334	Carbon	330K 1/16W
R86	ERJ3GEYJ224	Carbon	220K ohms 1/16W
R87-89	YWR0816R473D	Metal	47K ohms 1/16W
R90	YWR0816R513D	Metal	51K ohms 1/16W
R91	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R92	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R93	YWR0816P393D	Metal	39K ohms 1/16W
R94	YWR0816P303D	Metal	30K ohms 1/16W
R96	YWR0816P101D	Metal	100 ohms 1/16W
R97	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R98	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R100	ERJ3GEYJ100	Carbon	10 ohms 1/16W
R101	ERJ3GEYJ684	Carbon	680K ohms 1/16W
R102	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R103	ERJ3GEYJ106	Carbon	10M ohms 1/16W
R105	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R106,107	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R108	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R109	ERJ3GEYJ391	Carbon	390 ohms 1/16W
R113	ERJ3GEYJ100	Carbon	10 ohms 1/16W
R114	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R115	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R116,119	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R123	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R124	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R126	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R127	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R128	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R129	ERJ3GEYJ564	Carbon	560K ohms 1/16W
R130	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R133	ERJ3GEYJ682	Carbon	6.8K ohms 1/16W
R134	YWR0816P101D	Metal	100 ohms 1/16W
R135	YWR0816P103D	Metal	10K ohms 1/16W
R136	YWR0816P102D	Metal	1K ohms 1/16W
R137	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R138	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R139	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R140	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R158,159	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R160	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R229,230	ERJ3GEYJ750	Carbon	75 ohms 1/16W
R231	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R232	ERJ3GEYJ392	Carbon	3.9K ohms 1/16W
R234	ERJ3GEYJ272	Carbon	2.7K ohms 1/16W
R235	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R236	ERJ3GEYJ562	Carbon	5.6K ohms 1/16W
R237	ERJ3GEYJ182	Carbon	1.8K ohms 1/16W
R238	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R239	ERJ3GEYJ392	Carbon	3.9K ohms 1/16W
R240	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R241	ERJ3GEYJ272	Carbon	2.7K ohms 1/16W
R242	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R243	YWR0816P562D	Metal	5.6K ohms 1/16W
R244	ERJ3GEYJ182	Carbon	1.8K ohms 1/16W
R245,246	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R248	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R249	ERJ3GEYJ822	Carbon	8.2K ohms 1/16W
R250	ERJ3GEYJ392	Carbon	3.9K ohms 1/16W
R251	ERJ3GEYJ623	Carbon	62K ohms 1/16W
R252	YWR0816P302D	Metal	3K ohms 1/16W
R253	ERJ3GEYJ433	Carbon	43K ohms 1/16W
R254	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R255	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R256	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R257	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R258	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R259	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R260	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R261	ERJ3GEYJ563	Carbon	56K ohms 1/16W
R262,263	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R264-267	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R269,270	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R271	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R272,273	ERJ3GEYJ362	Carbon	3.6K ohms 1/16W
R274	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R275	ERJ3GEYJ101	Carbon	100 ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R276	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R277	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R278	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R279	ERJ3GEYJ182	Carbon	1.8K ohms 1/16W
R280	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R281	ERJ3GEYJ272	Carbon	2.7K ohms 1/16W
R282	ERJ3GEYJ622	Carbon	6.2K ohms 1/16W
R283-285	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R286	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R287	ERJ3GEYJ432	Carbon	4.3K ohms 1/16W
R288	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R289	ERJ3GEYJ182	Carbon	1.8K ohms 1/16W
R290	ERJ3GEYJ682	Carbon	6.8K ohms 1/16W
R291	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R292	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R293	ERJ3GEYJ392	Carbon	3.9K ohms 1/16W
R294,295	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R297	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R300	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R301	ERJ3GEYJ272	Carbon	2.7K ohms 1/16W
R302	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R303	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R304,305	ERJ3GEYJ272	Carbon	2.7K ohms 1/16W
R306	ERJ3GEYJ471	Carbon	470 ohms 1/16W
R307	ERJ3GEYJ272	Carbon	2.7K ohms 1/16W
R308	ERJ3GEYJ563	Carbon	56K ohms 1/16W
R309,310	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R311	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R314	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R315	YWR0816P562D	Metal	5.6K ohms 1/16W
R316	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R317	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R318	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R319	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R320,321	ERJ3GEYJ241	Carbon	240 ohms 1/16W
R322,331	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R332	ERJ3GEYJ225	Carbon	2.2M ohms 1/16W
R333	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R334	YWR0816P681D	Metal	680 ohms 1/16W
R335	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R336	YWR0816P121D	Metal	120 ohms 1/16W
R337	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R338	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R339	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R400	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R401	YWR0816P151D	Metal	150 ohms 1/16W
R402-404	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R405	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R406,407	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R408	ERJ3GEYJ563	Carbon	56K ohms 1/16W
R409	ERJ3GEYJ225	Carbon	2.2M ohms 1/16W
R410	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R411	YWR0816P681D	Metal	680 ohms 1/16W
R412	ERJ3GEYJ223	Carbon	22K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R413	YWR0816P131D	Metal	130 ohms 1/16W
R415	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R416-418	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R419	ERJ3GEYJ392	Carbon	3.9K ohms 1/16W
R420,422	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R423,424	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R425	ERJ3GEYJ392	Carbon	3.9K ohms 1/16W
R426	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R427	ERJ3GEYJ682	Carbon	6.8K ohms 1/16W
R428	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R429	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R430	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R431	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R432	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R433	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R434	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R435	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R436	ERJ3GEYJ750	Carbon	75 ohms 1/16W
R437,438	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R439	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R440	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R441	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R442	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R443	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R444	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R445	ERJ3GEYJ750	Carbon	75 ohms 1/16W
R446,447	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R448	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R449	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R500	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R501	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R502	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R503	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R504	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R505	ERJ3GEYJ750	Carbon	75 ohms 1/16W
R506	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R507	ERJ3GEYJ682	Carbon	6.8K ohms 1/16W
R508	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R509	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R510	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R511	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R512	ERJ3GEYJ471	Carbon	470 ohms 1/16W
R513,514	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R516	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R537	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R544	YWR0816P102D	Metal	1K ohms 1/16W
R550	YWR0816R184D	Metal	180K ohms 1/16W
R551-553	YWR0816R104D	Metal	100K ohms 1/16W
R554	YWR0816P222D	Metal	2.2K ohms 1/16W
R555	YWR0816P223D	Metal	22K ohms 1/16W
R556	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R557	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R558	ERJ3GEYJ563	Carbon	56K ohms 1/16W
R561	ERJ3GEYJ564	Carbon	560K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R562	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R564	ERJ3GEYJ106	Carbon	10M ohms 1/16W
R565	ERJ3GEYJ100	Carbon	10 ohms 1/16W
R567,568	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R569,570	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R572	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R600,602	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R605	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R606	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R607	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R608	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R609	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R610,611	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R612	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R613	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
VR1-3	YWRH03AVAS3W	Variable Resistor	4.7K ohms
VR4,5	YWRH03AVAJ3W	Variable Resistor	2.2K ohms
VR6	YWRH03AVA13W	Variable Resistor	1K ohms
VR7	YWRH03AVAJ3W	Variable Resistor	2.2K ohms
VR8,9	YWRH03AVAS2W	Variable Resistor	470 ohms
VR10	YWRH03AVAJ3W	Variable Resistor	2.2K ohms
VR11,12	YWRH03AVAS4W	Variable Resistor	47K ohms
VR13	YWRH03AVA13W	Variable Resistor	1K ohms
VR14	YWRH03AVAJ3W	Variable Resistor	2.2K ohms
VR15-17	YWRH03AVAS3W	Variable Resistor	4.7K ohms
VR18	YWRH03AVAJ3W	Variable Resistor	2.2K ohms
VR19	YWRH03AVAS2W	Variable Resistor	470 ohms
C1	YW5F104Z2VB	Ceramic	0.1 µF
C2	ECEV0JV470S	Electrolytic	47 µF 6.3V
C3	SK21C475KRB	Electrolytic	4.7 µF 16V
C4	SK20J106KRB	Electrolytic	10 µF 6.3V
C5	ECEV0JV470S	Electrolytic	47 µF 6.3V
C8	YW5CH181J5VB	Ceramic	180 pF
C9,10	YW5F104Z2VB	Ceramic	0.1 µF
C11	SK31A106KRB	Electrolytic	10 µF 10V
C12-14	ECEV0JV470S	Electrolytic	47 µF 6.3V
C15	YW5X102K5VB	Ceramic	1000 pF
C16	SK21A225KRA	Electrolytic	2.2 µF 10V
C17	YW400102CHJT	Ceramic	1000 pF
C18,19	SK31A475KRA	Electrolytic	47 µF 10V
C20	SK21C475KRB	Electrolytic	47 µF 16V
C21	YW5F104Z2VB	Ceramic	0.1 µF
C22	YW400102CHJT	Ceramic	1000 pF
C23-25	SK31A475KRA	Electrolytic	4.7 µF 10V
C26	ECWV1E154JS	Plastic	0.15 µF
C27,28	SK31A475KRA	Electrolytic	4.7 µF 10V
C29	YW5CH100J5VB	Ceramic	10 pF
C30,31	SK31A475KRA	Electrolytic	4.7 µF 10V
C32	YW5CH100J5VB	Ceramic	10 pF
C33	YW5CH220J5VB	Ceramic	22 pF
C35,37	SK31A475KRA	Electrolytic	4.7 µF 10V
C39	YW5CH050D5VB	Ceramic	5 pF
C40	YW5CH221J5VB	Ceramic	220 pF
C41	YW5X102K5VB	Ceramic	1000 pF
C42	SK21V474KRA	Electrolytic	0.47 µF 35V

REF.NO.	PART NO.	DESCRIPTION	
C43	YW5CH101J5VB	Ceramic	100 pF
C44	SK31A475KRA	Electrolytic	4.7 µF 10V
C45	YW5F333Z2VB	Ceramic	0.033 µF
C46,47	SK31A475KRA	Electrolytic	4.7 µF 10V
C48,49	ECEV1CV470	Electrolytic	47 µF 16V
C51	ECEV0JV330	Electrolytic	33 µF 6.3V
C52	ECEV0JV470S	Electrolytic	47 µF 6.3V
C54	YW5CH100J5VB	Ceramic	10 pF
C65	ECEV1CV470	Electrolytic	47 µF 6.3V
C66	ECEV0JV330	Electrolytic	33 µF 6.3V
C67	ECEV0JV470S	Electrolytic	47 µF 6.3V
C68	ECEV0JV330	Electrolytic	33 µF 6.3V
C73,74	YW5F104Z2VB	Ceramic	0.1 µF
C75	ECEV0JA331	Electrolytic	330 µF 6.3V
C79	YW5CH101J5VB	Ceramic	100 pF
C80	YW5X103K2VB	Ceramic	0.01 µF
C81	YW5F104Z2VB	Ceramic	0.1 µF
C85-87	YWSK0G106KRB	Electrolytic	10 µF 4V
C92,93	YWSK1C106KRC	Electrolytic	10 µF 6.3V
C97	SK0J476KRD0	Electrolytic	470 µF 6.3V
C98	YW5X102K5VB	Ceramic	1000 pF
C99	YW5CH221J5VB	Ceramic	220 pF
C100	YW5CH100J5VB	Ceramic	10 pF
C106	YW5X102K5VB	Ceramic	1000 pF
C107	YW5CH100J5VB	Ceramic	10 pF
C117	YW5CH150J5VB	Ceramic	15 pF
C142	ECEV1CV100	Electrolytic	10 µF 16V
C143	YW5F104Z2VB	Ceramic	0.1 µF
C144	YW5CH270J5VB	Ceramic	27 pF
C145	YW5CH151J5VB	Ceramic	150 pF
C147	YW5CH270J5VB	Ceramic	27 pF
C148	YW5CH151J5VB	Ceramic	150 pF
C149	ECEV1CV100	Electrolytic	10 µF 16V
C150,151	YW5CH470J5VB	Ceramic	47 pF
C152	YW5CH150J5VB	Ceramic	15 pF
C153	ECEV1CV100	Electrolytic	10 µF 16V
C154	YW5F104Z2VB	Ceramic	0.1 µF
C155,156	ECEV0JV330	Electrolytic	33 µF 6.3V
C157,158	ECEV1CV100	Electrolytic	10 µF 16V
C159,160	ECEV1EV4R7	Electrolytic	4.7 µF 25V
C161	ECEV0JV470S	Electrolytic	47 µF 6.3V
C162	YW5F104Z2VB	Ceramic	0.1 µF
C163-165	ECEV1EV4R7	Electrolytic	4.7 µF 25V
C166	YW5F104Z2VB	Ceramic	0.1 µF
C167,168	YW5CH050D5VB	Ceramic	5 pF
C169	YW5F104Z2VB	Ceramic	0.1 µF
C170	ECEV1CV100	Electrolytic	10 µF 16V
C171	YW5CH100J5VB	Ceramic	10 pF
C172	YW5CH150J5VB	Ceramic	15 pF
C173,174	YW5CH470J5VB	Ceramic	47 pF
C175,176	ECEV1CV100	Electrolytic	10 µF 16V
C178,179	ECEV1CV100	Electrolytic	10 µF 16V
C180,181	YW5CH470J5VB	Ceramic	47 pF
C182	YW5CH150J5VB	Ceramic	15 pF
C183	YW5CH620J5VB	Ceramic	62 pF

REF.NO.	PART NO.	DESCRIPTION
C184	YW5CH221J5VB	Ceramic 220 pF
C185	YF400224FZT	Ceramic 0.22 µF
C186	ECEV0JV330	Electrolytic 33 µF 6.3V
C187	ECEV1CV470	Electrolytic 47 µF 16V
C188,189	YW5X103K2VB	Ceramic 0.01 µF
C190	SK0J476KRD0	Electrolytic 47 µF 6.3V
C191,192	YW5CH470J5VB	Ceramic 47 pF
C193	YW5CH150J5VB	Ceramic 15 pF
C194	YW5CH620J5VB	Ceramic 62 pF
C195	YW5CH221J5VB	Ceramic 220 pF
C196	YF400224FZT	Ceramic 0.22 F
C197	ECEV1CV470	Electrolytic 47 µF 16V
C198,199	YW5X103K2VB	Ceramic 0.01 F
C200	ECEV0JV330	Electrolytic 33 µF 6.3V
C201	SK0J476KRD0	Electrolytic 47 µF 6.3V
C202	YW5CH050D5VB	Ceramic 5 pF
C203	ECEV1EV330	Electrolytic 33 µF 25V
C204	ECEV1HV010	Electrolytic 1 µF 50V
C205	ECEV0JV330	Electrolytic 33 µF 6.3V
C207	YW5CH390J5VB	Ceramic 39 pF
C209	YW5CH151J5VB	Ceramic 150 pF
C210	ECEV1CV100	Electrolytic 10 µF 16V
C211	ECEV0JV330	Electrolytic 33 µF 6.3V
C212	YW5F104Z2VB	Ceramic 0.1 F
C213	ECEV0JV330	Electrolytic 33 µF 6.3V
C214	YW5F104Z2VB	Ceramic 0.1 µF
C215	ECEV0JV330	Electrolytic 33 µF 6.3V
C216	YW5F104Z2VB	Ceramic 0.1 µF
C217,218	ECEV1CV100	Electrolytic 10 µF 16V
C219	YW5CH080D5VB	Ceramic 8 pF
C220	YW5CH150J5VB	Ceramic 15 pF
C221,222	YW5CH470J5VB	Ceramic 47 pF
C228,229	RJ46R3V102M	Electrolytic 1000 µF 6.3V
C230	ECEV1CV100	Electrolytic 10 µF 16V
C231	ECEV1EV330	Electrolytic 33 µF 25V
C234	ECEV1CV100	Electrolytic 10 µF 16V
C235	ECEV1HV010	Electrolytic 1 µF 50V
C236	ECEV0JV330	Electrolytic 33 µF 6.3V
C238	YW5CH100J5VB	Ceramic 10 pF
C239	YW5F104Z2VB	Ceramic 0.1 µF
C301	ECEV1CV100	Electrolytic 10 µF 16V
C302,303	RJ46R3V102M	Electrolytic 1000 µF 6.3V
C305	ECEV1CV100	Electrolytic 10 µF 16V
C306	YW5X102K5VB	Ceramic 1000 pF
C307	YWSK1C106KRC	Electrolytic 10 µF 16V
CT1,3	YWCDX20RF	Trimmer Capacitor 20 pF
DL1	ELB4A514	Delay Line
L1-4	YWNL32100K	Coil 10 µH
L11	YWNL32220K	Coil 22 µH
L12-16	YWNL325R6M	Coil 5.6 µH
L17	EIC5EB005A	Coil
SW1	YWCHS04TB	Slide Switch
X1	YWSMX177VC0A	Crystal Oscillator
X3	YWSMX140VC0A	Crystal Oscillator
X4	YWVC0140A	Crystal Oscillator

REF.NO.	PART NO.	DESCRIPTION
X5	YWSMX177INTA	Crystal Oscillator
CF101	ELB4A518	Filter
CN1,2	FCN215Q034GA	34-pin Connector
TP1-10	YWRCT2125TPV	Test Point

DIGITAL PROCESS BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB6 (RTL)	YWVKBF500E3A	Printed Circuit Board Assy
IC1-3	YWCXD1175AM	IC
IC4	YWVC5776	LSI
IC5	YWVC5727	LSI
IC6	NJM2904M	IC
IC7	YWTC74AC00F	IC
IC8	YWTC74AC04AF	IC
IC9	YW74AC08SJ	IC
IC10	YWVC5777A	LSI
IC11	YWVC5778	LSI
IC13-16	YWMN6557AS	IC
IC17	YWUPD4528BG	IC
IC18	YWUPD4538BG	IC
IC19	YWUPD74HC32G	IC
IC21	UPD74HC157G	IC
IC22	NJM2904M	IC
IC24	UPD74HC157G	IC
IC25	YWUPD74HC11G	IC
IC26-28	UPD74HC164G	IC
IC30,31	NJM2903M	IC
IC32	YWTC4S66FR	IC
IC33,34	YWTC7S08F	IC
IC35	YWHD74AC164F	IC
IC36	YWTC7S04F	IC
Q1	2SD1819-QRS	Transistor
Q2	2SB956-RS	Transistor
Q3	2SB1073-QR	Transistor
Q4,6	2SD1819-QRS	Transistor
Q7-12	2SD1819-QRS	Transistor
Q13	2SB1219-QRS	Transistor
Q14	2SB956-RS	Transistor
Q15-18	2SD1819-QRS	Transistor
R1	ERJ3GEYJ100	Carbon 10 ohms 1/16W
R2	ERJ3GEY0R00	Carbon
R3,4	ERJ3GEYJ100	Carbon 10 ohms 1/16W
R6,7	YWR0816P103D	Metal 10K ohms 1/16W
R8	YWR0816P163D	Metal 16K ohms 1/16W
R9	ERJ3GEYJ102	Carbon 1K ohms 1/16W
R10	ERJ3GEYJ331	Carbon 330 ohms 1/16W
R11	YWR0816P153D	Metal 15K ohms 1/16W
R12,13	YWR0816P103D	Metal 10K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R14	YWR0816P123D	Metal	12K ohms 1/16W
R15	YWR0816P103D	Metal	10K ohms 1/16W
R16	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R17	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R18,19	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R20-27	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R29-37	ERJ3GEYJ100	Carbon	10 ohms 1/16W
R40	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R41,42	ERJ3GEYJ100	Carbon	10 ohms 1/16W
R49-56	ERJ3GEYJ100	Carbon	10 ohms 1/16W
R57-59	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R60	YWR0816P222D	Metal	2.2K ohms 1/16W
R61	YWR0816P152D	Metal	1.5K ohms 1/16W
R62	YWR0816P221D	Metal	220 ohms 1/16W
R63	YWR0816P152D	Metal	1.5K ohms 1/16W
R64	YWR0816P332D	Metal	3.3K ohms 1/16W
R65	YWR0816P222D	Metal	2.2K ohms 1/16W
R66	YWR0816P122D	Metal	1.2K ohms 1/16W
R67,68	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R69	ERJ3GEYJ511	Carbon	510 ohms 1/16W
R70	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R71	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R72	YWR0816P123D	Metal	12K ohms 1/16W
R73	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R74	YWR0816P103D	Metal	10K ohms 1/16W
R75	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R76	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R77	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R78	YWR0816R433D	Metal	43K ohms 1/16W
R79	YWR0816P333D	Metal	33K ohms 1/16W
R80	ERJ3GEYJ471	Carbon	470 ohms 1/16W
R81	YWR0816P113D	Metal	11K ohms 1/16W
R82	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R83	YWR0816P123D	Metal	12K ohms 1/16W
R84,85	YWR0816P103D	Metal	10K ohms 1/16W
R86	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R87	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R88	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R89	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R90	YWR0816P222D	Metal	2.2K ohms 1/16W
R91	YWR0816P122D	Metal	1.2K ohms 1/16W
R92,93	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R94	ERJ3GEYJ511	Carbon	510 ohms 1/16W
R95	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R96	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R97	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R98	YWR0816P512D	Metal	5.1K ohms 1/16W
R99	YWR0816P392D	Metal	3.9K ohms 1/16W
R101	ERJ3GEYJ562	Carbon	5.6K ohms 1/16W
R102,104	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R106	ERJ3GEYJ562	Carbon	5.6K ohms 1/16W
R107	YWR0816P562D	Metal	5.6K ohms 1/16W
R108	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R109	YWR0816P562D	Metal	5.6K ohms 1/16W
R111	ERJ3GEYJ562	Carbon	5.6K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R112	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R113	YWR0816P472D	Metal	4.7K ohms 1/16W
R114	YWR0816P302D	Metal	3K ohms 1/16W
R116	ERJ3GEYJ562	Carbon	5.6K ohms 1/16W
R117	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R118,125	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R126-148	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R153,155	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R159	ERJ3GEYJ100	Carbon	10 ohms 1/16W
R160	YWR0816R433D	Metal	43K ohms 1/16W
R161	YWR0816R823D	Metal	82K ohms 1/16W
R168-170	ERJ3GEYJ100	Carbon	10 ohms 1/16W
R172	ERJ3GEYJ100	Carbon	10 ohms 1/16W
R178	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R180-187	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R201	YWR0816Q750D	Metal	75 ohms 1/16W
R204	YWR0816P681D	Metal	680 ohms 1/16W
R226	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R301	YWR0816Q750D	Metal	75 ohms 1/16W
R304	YWR0816P681D	Metal	680 ohms 1/16W
R326	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R401	YWR0816P271D	Metal	270 ohms 1/16W
R405	YWR0816P202D	Metal	2K ohms 1/16W
R406-414	YWR0816P102D	Metal	1K ohms 1/16W
R416-425	YWR0816P202D	Metal	2K ohms 1/16W
R426	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R501	YWR0816Q750D	Metal	75 ohms 1/16W
R504	YWR0816P681D	Metal	680 ohms 1/16W
R526	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R601	YWR0816Q750D	Metal	75 ohms 1/16W
R602	YWR0816P202D	Metal	2K ohms 1/16W
R603	YWR0816P302D	Metal	3K ohms 1/16W
R604	YWR0816P681D	Metal	680 ohms 1/16W
R605	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R606	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R607,608	YWR0816P102D	Metal	1K ohms 1/16W
R609	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R612	YWR0816P102D	Metal	1K ohms 1/16W
R613	YWR0816P911D	Metal	910 ohms 1/16W
R614,626	ERJ3GEY0R00	Carbon	0 ohms 1/16W
VR3,4	EVM7JSW30B25	Variable Resistor	200K ohms
C1-9	YW5F104Z2VB	Ceramic	0.1 μF
C10	SK21A476KRD0	Electrolytic	47 μF 10V
C11-18	YW5F104Z2VB	Ceramic	0.1 μF
C19	SK21A476KRD0	Electrolytic	47 μF 10V
C20	ECEV1CV470	Electrolytic	47 μF 16V
C21	ECEV0JV220	Electrolytic	22 μF 6.3V
C22	SK21A476KRD0	Electrolytic	47 μF 10V
C23	ECEV0JV220	Electrolytic	22 μF 6.3V
C24,25	SK21A476KRD0	Electrolytic	47 μF 10V
C26	YW5F104Z2VB	Ceramic	0.1 μF
C27	YW5CH050D5VB	Ceramic	5 pF
C28	YW5CH470J5VB	Ceramic	47 pF
C29	YW5X681K5VB	Ceramic	680 pF
C30,31	YW5F104Z2VB	Ceramic	0.1 μF

REF.NO.	PART NO.	DESCRIPTION
C34	SK21A476KRD0	Electrolytic 47 μF 10V
C35-42	YW5F104Z2VB	Ceramic 0.1 μF
C43,44	YW5X102K5VB	Ceramic 1000 pF
C45,46	YW5F104Z2VB	Ceramic 0.1 μF
C47	YW5CH470J5VB	Ceramic 47 pF
C48	YW5CH221J5VB	Ceramic 220 pF
C49	YW5F224Z1VB	Ceramic 0.22 μF
C50	SK21A476KRD0	Electrolytic 47 μF 10V
C51	ECEV1CV470	Electrolytic 47 μF 16V
C53	YWSK0J226KRC	Electrolytic 22 μF 6.3V
C54	ECEV0JV220	Electrolytic 22 μF 6.3V
C55	YW5CH470J5VB	Ceramic 47 pF
C56	YW5CH221J5VB	Ceramic 220 pF
C57	YW5F224Z1VB	Ceramic 0.22 μF
C58	SK21A476KRD0	Electrolytic 47 μF 10V
C59	YW5F224Z1VB	Ceramic 0.22 μF
C60-63	YW5F104Z2VB	Ceramic 0.1 μF
C65,66	YW5F104Z2VB	Ceramic 0.1 μF
C69,70	YW5F104Z2VB	Ceramic 0.1 μF
C71	ECEV1CV470	Electrolytic 47 μF 16V
C72	SK21A476KRD0	Electrolytic 47 μF 10V
C73	YW5F104Z2VB	Ceramic 0.1 μF
C74	YW5CH121J5VB	Ceramic 120 pF
C75	ECEV1CV470	Electrolytic 47 μF 16V
C76-80	YW5F104Z2VB	Ceramic 0.1 μF
C83,86	YW5X103K2VB	Ceramic 0.01 μF
C87-89	YW5CH220J5VB	Ceramic 22 pF
C201	YW5F104Z2VB	Ceramic 0.1 μF
C202	SK21A476KRD0	Electrolytic 47 μF 10V
C203	YWSK1C105KRA	Electrolytic 1 μF 16V
C204,205	YW5F104Z2VB	Ceramic 0.1 μF
C206	SK21A476KRD0	Electrolytic 47 μF 10V
C207	YW5F104Z2VB	Ceramic 0.1 μF
C208	SK21A476KRD0	Electrolytic 47 μF 10V
C301	YW5F104Z2VB	Ceramic 0.1 μF
C302	SK21A476KRD0	Electrolytic 47 μF 10V
C303	YWSK1C105KRA	Electrolytic 1 μF 16V
C304,305	YW5F104Z2VB	Ceramic 0.1 μF
C306	SK21A476KRD0	Electrolytic 47 μF 10V
C307	YW5F104Z2VB	Ceramic 0.1 μF
C308	SK21A476KRD0	Electrolytic 47 μF 10V
C501	YW5F104Z2VB	Ceramic 0.1 μF
C502	SK21A476KRD0	Electrolytic 47 μF 10V
C503	YWSK1C105KRA	Electrolytic 1 μF 16V
C504,505	YW5F104Z2VB	Ceramic 0.1 μF
C506	SK21A476KRD0	Electrolytic 47 μF 10V
C507	YW5F104Z2VB	Ceramic 0.1 μF
C508	SK21A476KRD0	Electrolytic 47 μF 10V
C601	YW5F104Z2VB	Ceramic 0.1 μF
C602	SK21A476KRD0	Electrolytic 47 μF 10V

REF.NO.	PART NO.	DESCRIPTION
C603	YWSK1C105KRA	Electrolytic 1 μF 16V
C604,605	YW5F104Z2VB	Ceramic 0.1 μF
C606	SK21A476KRD0	Electrolytic 47 μF 10V
C607	YW5F104Z2VB	Ceramic 0.1 μF
C608	SK21A476KRD0	Electrolytic 47 μF 10V
C609	SK21A335KRA	Electrolytic 3.3 μF 10V
C610	ECEV1CV470	Electrolytic 47 μF 16V
CT1-3	TZB04R500AAT	Trimmer Capacitor
CF201,301	HF55BHW35X45	Filter
CF401,501	HF55BHW35X45	Filter
CF601	HF55BHW35X45	Filter
CN1	FCN215Q050GA	50-pin Connector
CN2,3	YWLPC30FDG	30-pin Connector
TP1,3	YWRCT2125TPV	Test Point
TP4-7	YWRCT2125TPV	Test Point
TP9-13	YWRCT2125TPV	Test Point
M82	YWV2HA1078A2	Shield Part
M83	YWV2FA0599A4	Cushion
M84	YWV2FA0600A4	Cushion
M85	YWV7DA0343A3	Heat Sink

SYSTEM CONTROL BOARD

REF.NO.	PART NO.	DESCRIPTION	
PCB7 (RTL)	YWVKCF500E3A	Printed Circuit Board Assy	
IC1	YWL7A0425	LSI	
IC2	YWMN18885	LSI	
IC3	YWM27C512F44	IC	
IC4	YW43256G15LL	IC	
IC5	YWM62352GP	IC	
IC6	YWUPC4064G2	IC	
IC7	YWUPD6450601	IC	
IC8	YWRTC450315B	IC	
IC9	YWM51957BFP	IC	
IC10-12	YWUPD4081BG	IC	
IC13	YWUPD4011BG	IC	
IC14	YWUPC4062G2	IC	
IC15	YWUPD4081BG	IC	
IC16	UPD74HC4066G	IC	
IC17	YWM51957BFP	IC	
IC18	YWUPC4064G2	IC	
IC19,20	YW43256G15LL	IC	
IC21,22	UPD74HC245GS	IC	
IC23,24	YWMB86023PFG	IC	
Q1-3	2SD1819-QRS	Transistor	
Q4	2SB1218-QRS	Transistor	
Q5-8	2SD1819-QRS	Transistor	
Q9	2SB1219-QRS	Transistor	
Q10-12	2SD1819-QRS	Transistor	
Q13	2SB1218-QRS	Transistor	
Q14	2SB1219-QRS	Transistor	
Q15	2SD1819-QRS	Transistor	
Q16	2SB766A-QR	Transistor	
Q17	2SD1819-QRS	Transistor	
Q18	2SD874A-RS	Transistor	
Q19	2SB1218-QRS	Transistor	
Q20	2SB766A-QR	Transistor	
Q21	2SD1819-QRS	Transistor	
D1-5	MA141K	Diode	
D6,7	MA143	Diode	
D8-10	MA141K	Diode	
R1	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R2,3	ERJ3GEYJ224	Carbon	220K ohms 1/16W
R4,5	ERJ3GEYJ683	Carbon	68K ohms 1/16W
R6	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R7	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R8,9	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R10	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R11,12	ERJ3GEYJ563	Carbon	56K ohms 1/16W
R13-15	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R17-43	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R44	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R45	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R46	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R47-50	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R51	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R52-54	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R55-58	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R59	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R60	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R61,62	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R63,64	ERJ3GEYJ470	Carbon	47 ohms 1/16W
R65,66	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R67	YWR0816P103D	Metal	10K ohms 1/16W
R68	YWR0816P303D	Metal	30K ohms 1/16W
R69	YWR0816P103D	Metal	10K ohms 1/16W
R70-85	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R86	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R87-90	ERJ3GEYJ470	Carbon	47 ohms 1/16W
R91	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R93,94	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R95-105	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R106-108	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R109-115	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R116	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R117-122	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R123-130	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R131-135	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R136	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R138	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R139	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R140	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R142	YWR0816P472D	Metal	4.7K ohms 1/16W
R143	YWR0816P123D	Metal	12K ohms 1/16W
R144	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R145-148	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R149	YWR0816R433D	Metal	43K ohms 1/16W
R150	YWR0816P272D	Metal	2.7K ohms 1/16W
R151	YWR0816R433D	Metal	43K ohms 1/16W
R152	YWR0816P272D	Metal	2.7K ohms 1/16W
R153	YWR0816R433D	Metal	43K ohms 1/16W
R154	YWR0816P272D	Metal	2.7K ohms 1/16W
R155,156	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R157	YWR0816P123D	Metal	12K ohms 1/16W
R158	YWR0816P162D	Metal	1.6K ohms 1/16W
R159	YWR0816P432D	Metal	4.3K ohms 1/16W
R160	ERJ3GEYJ470	Carbon	47 ohms 1/16W
R161	YWR0816P163D	Metal	16K ohms 1/16W
R162	YWR0816P202D	Metal	2K ohms 1/16W
R163	YWR0816P123D	Metal	12K ohms 1/16W
R164	ERJ3GEYJ471	Carbon	470 ohms 1/16W
R165	YWR0816P123D	Metal	12K ohms 1/16W
R166	YWR0816P202D	Metal	2K ohms 1/16W
R167	YWR0816P153D	Metal	15K ohms 1/16W
R168	ERJ3GEYJ471	Carbon	470 ohms 1/16W
R169	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R170	ERJ3GEYJ122	Carbon	1.2K ohms 1/16W
R171	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R172	ERJ3GEYJ183	Carbon	18K ohms 1/16W
R173	ERJ3GEYJ912	Carbon	9.1K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R174	ERJ3GEYJ133	Carbon	13K ohms 1/16W
R175	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R176	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R178	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R179	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R180	ERJ3GEYJ513	Carbon	51K ohms 1/16W
R181	ERJ3GEYJ393	Carbon	39K ohms 1/16W
R182,183	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R184	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R186,187	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R189,190	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R191	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R192	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R193	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R194	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R195	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R196	YWR0816P682D	Metal	6.8K ohms 1/16W
R197	YWR0816P123D	Metal	12K ohms 1/16W
R198	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R199	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R200	ERJ3GEYJ224	Carbon	220K ohms 1/16W
R201	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R202	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R203	YWR0816P133D	Metal	13K ohms 1/16W
R204	YWR0816R393D	Metal	39K ohms 1/16W
R205	YWR0816P153D	Metal	15K ohms 1/16W
R206	YWR0816R473D	Metal	47K ohms 1/16W
R207	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R208	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R209	YWR0816P133D	Metal	13K ohms 1/16W
R210	YWR0816R393D	Metal	39K ohms 1/16W
R211	YWR0816P153D	Metal	15K ohms 1/16W
R212	YWR0816R473D	Metal	47K ohms 1/16W
R213	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R214	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R215	YWR0816P133D	Metal	13K ohms 1/16W
R216	YWR0816R393D	Metal	39K ohms 1/16W
R217	YWR0816P153D	Metal	15K ohms 1/16W
R218	YWR0816R473D	Metal	47K ohms 1/16W
R219-227	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R229	ERJ3GEYJ394	Carbon	390K ohms 1/16W
R230,231	ERJ3GEYJ473	Carbon	47K ohms 1/16W
C1	SK21A335KRA	Electrolytic	3.3 µF 10V
C2,3	YW5F104Z2VB	Ceramic	0.1 µF
C4	YW5X102K5VB	Ceramic	1000 pF
C5	YW5X332K5VB	Ceramic	3300 pF
C6-11	YW5F104Z2VB	Ceramic	0.1 µF
C12	SK31A475KRA	Electrolytic	4.7 µF 10V
C13	YWSK1C105KRA	Electrolytic	1 µF 16V
C14	SK31A106KRB	Electrolytic	10 µF 10V
C15	YWSK1C105KRA	Electrolytic	1 µF 16V
C16	YW5F104Z2VB	Ceramic	0.1 µF
C17	YW5CH151J5VB	Ceramic	150 pF
C18	YW5F104Z2VB	Ceramic	0.1 µF
C19-22	YW5CH151J5VB	Ceramic	150 pF
C26	SK31A106KRB	Electrolytic	10 µF 10V
C27-31	YW5F104Z2VB	Ceramic	0.1 µF
C32	YWSK1V104KRA	Electrolytic	0.1 µF 35V
C33,34	YW5F104Z2VB	Ceramic	0.1 µF
C36,38	YW5F104Z2VB	Ceramic	0.1 µF
C40	YW5F104Z2VB	Ceramic	0.1 µF
C41	SK21C475KRB	Electrolytic	4.7 µF 16V
C42	SK31A475KRA	Electrolytic	4.7 µF 10V
C43-45	YW5F104Z2VB	Ceramic	0.1 µF
C46	SK21A476KRD	Electrolytic	47 µF 10V
C47	YW5X223K2VB	Ceramic	0.022 µF
C48	YW5F104Z2VB	Ceramic	0.1 µF
C49	YW5X102K5VB	Ceramic	1000 pF
C50,51	YW5F104Z2VB	Ceramic	0.1 µF
C52	YW5UJ180J5VB	Ceramic	18 pF
C53	YW5UJ120J5VB	Ceramic	12 pF 50V(UJ
C54	SK20J106KRB	Electrolytic	10 µF 6.3V
C55	SK21A685KRB	Electrolytic	6.8 µF 10V
C56	YW5CH040D5VB	Ceramic	4 pF
C57	SK20J336KRC	Electrolytic	33 µF 6.3V
C58	YW5F104Z2VB	Ceramic	0.1 µF
C59,60	YW5X103K2VB	Ceramic	0.01 µF
C61	SK20J686KRD	Electrolytic	68 µF 6.3V
C62	SK21C336KRD0	Electrolytic	33 µF 16V
C63	ECEV0JV220	Electrolytic	22 µF 6.3V
C64	SK21A476KRD0	Electrolytic	47 µF 10V
C65	ECEV0JV220	Electrolytic	22 µF 6.3V
C66	SK21A476KRD0	Electrolytic	47 µF 10V
C67	ECEV0JV220	Electrolytic	22 µF 6.3V
C68-71	YW5F104Z2VB	Ceramic	0.1 µF
C72-77	YW5CH471J5VB	Ceramic	470 pF
C78,79	YW5F104Z2VB	Ceramic	0.1 µF
C80	SK31A106KRB	Electrolytic	10 µF 10V
C81,82	YW5F104Z2VB	Ceramic	0.1 µF
C83	SK31A106KRB	Electrolytic	10 µF 10V
C84	SK21A476KRD0	Electrolytic	47 µF 10V
C85-87	SK31A106KRB	Electrolytic	10 µF 10V
CT1	ECRJA010A12	Trimmer Capacitor	
L1	ELEXH470JA	Coil	47 µH
L2,3	YWNL321R0M	Coil	320 µH
SW1	YWSKHLLD	Push Switch	
X1	EF0GC8004A4	Oscillator	
CN1,2	FCN215Q034GA	34-pin Connector	
CN3,4	YWLPC30T1M2G	30-pin Connector	
CN5	YWDL3A28SVC	IC Socket	
CN6	YWDL3A28SVC	IC Socket	
BT1	BR30321F2	Battery	
TP1-6	YWRCT2125TPV	Test Point	
M86	YWV2HA1077A2	Shield Parts	

REF.NO.	PART NO.	DESCRIPTION	
MOTHER BOARD			
PCB8 (RTL)	YWVKBF500E4A	Printed Circuit Board Assy	
IC1	YWUPD74HC08G	IC	
IC3	YWUPD4053BG	IC	
IC4,5	YWTC4S584FR	IC	
IC6	YWUPD4538BG	IC	
IC7	YWTC4S01FR	IC	
IC8	YWTC4S66FR	IC	
IC9	YWM5282FP	IC	
IC10	YWUPD4520BG	IC	
IC11	YWTC4S69F	IC	
IC12	YWTC4S66FR	IC	
IC13	YWUPD4538BG	IC	
IC14	NJM2903M	IC	
IC15	YWUPD4051BG	IC	
IC16,17	YWUPC4064G2	IC	
IC18	YWUPC4062G2	IC	
IC19,20	YWUPD4051BG	IC	
IC21	YWTC4S30FR	IC	
IC22	YWTC7S08F	IC	
IC23	YWTC7S04F	IC	
IC24	YWUPD4053BG	IC	
IC25	YWUPD4051BG	IC	
IC30	YWTC4S69F	IC	
IC31	UPD74HC4066G	IC	
IC32	YWTC4S81FR	IC	
Q1	2SB1218-QRS	Transistor	
Q2	UN221E	Transistor	
Q3	2SD1819-QRS	Transistor	
Q4	2SB1218-QRS	Transistor	
Q5	2SB1219-QRS	Transistor	
Q6	2SB710-QRS	Transistor	
Q7	2SD661-TU	Transistor	
Q8,9	2SD1819-QRS	Transistor	
D1,3	MA143	Diode	
D6	MA4082M	Diode	
D7-10	MA141K	Diode	
D11	MA4082M	Diode	
D12	LN11WP23	Led	
D13	MA4062M	Diode	
D14-17	MA143	Diode	
R1	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R2	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R3,4	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R5	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R6,7	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R8,9	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R10	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R11	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R12	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R13	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R14	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R15,16	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R17	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R18	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R20	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R21	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R22	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R23	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R24,25	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R27,28	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R29-32	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R33	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R34	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R35	YWR0816P822D	Metal	8.2K ohms 1/16W
R36	YWR0816P103D	Metal	10K ohms 1/16W
R37	YWR0816P562D	Metal	5.6K ohms 1/16W
R38	YWR0816P183D	Metal	18K ohms 1/16W
R39	YWR0816P472D	Metal	4.7K ohms 1/16W
R40	ERJ3GEYJ273	Carbon	27K ohms 1/16W
R41	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R42	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R43,44	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R45	ERJ3GEYJ273	Carbon	27K ohms 1/16W
R46,47	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R48	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R49	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R50	YWR0816P333D	Metal	33K ohms 1/16W
R52	YWR0816P203D	Metal	20K ohms 1/16W
R53	YWR0816P472D	Metal	4.7K ohms 1/16W
R54,55	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R56	YWR0816R363D	Metal	36K ohms 1/16W
R57	YWR0816P153D	Metal	15K ohms 1/16W
R58	YWR0816P183D	Metal	18K ohms 1/16W
R59	YWR0816R363D	Metal	36K ohms 1/16W
R60	ERJ3GEYJ822	Carbon	8.2K ohms 1/16W
R61-63	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R64	ERJ3GEYJ303	Carbon	30K ohms 1/16W
R65	ERJ3GEYJ203	Carbon	20K ohms 1/16W
R69	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R70	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R72	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R73	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R74	ERJ3GEYJ123	Carbon	12K ohms 1/16W
R75	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R76	ERJ3GEYJ203	Carbon	20K ohms 1/16W
R77	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R78	ERJ3GEYJ303	Carbon	30K ohms 1/16W
R79	ERJ3GEYJ513	Carbon	51K ohms 1/16W
R80	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R81	ERJ3GEYJ203	Carbon	20K ohms 1/16W
R82	ERJ3GEYJ123	Carbon	12K ohms 1/16W
R83	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R84	ERJ3GEYJ203	Carbon	20K ohms 1/16W
R85	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R86-89	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R90	ERJ3GEYJ123	Carbon	12K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R91-96	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R99	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R100,101	ERJ3GEYJ304	Carbon	300K ohms 1/16W
R102,103	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R104	ERJ8GCSJ471	Carbon	470 ohms 1/8W
R105	ERJ3GEYJ563	Carbon	56K ohms 1/16W
R106	ERJ8GCSG271	Carbon	270 ohms 1/8W
R107	ERJ3GEYJ303	Carbon	30K ohms 1/16W
R108	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R109	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R110	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R111	ERJ8GCSJ222	Carbon	2.2K ohms 1/8W
R112	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R113	ERJ8GCSG122	Carbon	1.2K ohms 1/8W
R115	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R116,117	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R118	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R119-121	YWR0816R104D	Metal	100K ohms 1/16W
R122,123	YWR0816P681D	Metal	680 ohms 1/16W
R124,125	YWR0816R104D	Metal	100K ohms 1/16W
R126	YWR0816P102D	Metal	1K ohms 1/16W
R127	YWR0816P103D	Metal	10K ohms 1/16W
R128	YWR0816R473D	Metal	47K ohms 1/16W
R145	ERJ8GCSG821	Carbon	820 ohms 1/8W
R146,147	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R148	ERJ3GEYJ203	Carbon	20K ohms 1/16W
R149	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R154	ERJ3GEYJ750	Carbon	75 ohms 1/16W
R156	YWR0816R104D	Metal	100K ohms 1/16W
R158	ERJ3GEY0R00	Carbon	
R160	ERJ3GEYJ392	Carbon	3.9K ohms 1/16W
R170	ERJ3GEYJ912	Carbon	9.1K ohms 1/16W
R171	ERJ3GEYJ393	Carbon	39K ohms 1/16W
R172	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R173	ERJ3GEYJ303	Carbon	30K ohms 1/16W
R174	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R175-179	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R180	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R181	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R182	YWR0816R473D	Metal	47K ohms 1/16W
R183	ERJ3GEYJ101	Carbon	100 ohms 1/16W
VR3,4	PK502H103H0A	Variable Resistor	10K ohms
VR5	EVML3GA00B14	Variable Resistor	10K ohms
VR6	RK09K113100K	Variable Resistor	100K ohms
C1,2	YW5CH101J5VB	Ceramic	100 pF
C3	SK21A476KRD0	Electrolytic	47 µF 10V
C4,5	YWSK1E474KRA	Electrolytic	0.47 µF 25V
C6	SK1E106KRD0	Electrolytic	10 µF 25V
C7,8	ECEA1ASN220	Electrolytic	22 µF 10V
C9	ECEA1ESN3R3	Electrolytic	3.3 µF 25V (SN)
C11	YW5X152K5VB	Ceramic	1500 pF
C12	SK21A226KRC	Electrolytic	22 µF 10V
C13	SK31A106KRB	Electrolytic	10 µF 10V
C14	SK21A226KRC	Electrolytic	22 µF 10V
C15	YW5F104Z2VB	Ceramic	0.1 µF

REF.NO.	PART NO.	DESCRIPTION	
C16	YF400224FZT	Ceramic	0.22 µF
C17	SK31A106KRB	Electrolytic	10 µF 10V
C18	SK1A336KRD0	Electrolytic	33 µF 10V
C19,20	YW5F104Z2VB	Ceramic	0.1 µF
C21	YWSK1C106KRC	Electrolytic	10 µF 16V
C22	SK21A335KRA	Electrolytic	3.3 µF 10V
C23	ECEA1ESN3R3	Electrolytic	3.3 µF 25V (SN)
C24	SK21A335KRA	Electrolytic	3.3 µF 10V
C25	ECEA1ESN3R3	Electrolytic	3.3 µF 25V (SN)
C26	YW5F104Z2VB	Ceramic	0.1 µF
C27,28	YW5CH101J5VB	Ceramic	100 pF
C29,30	YW5F104Z2VB	Ceramic	0.1 µF
C31	YWSK1C106KRC	Electrolytic	10 µF 16V
C32	SK31A106KRB	Electrolytic	10 µF 10V
C34,35	YW5F104Z2VB	Ceramic	0.1 µF
C38	SK1A336KRD0	Electrolytic	33 µF 10V
C41-53	YW5F104Z2VB	Ceramic	0.1 µF
C54	SK21C336KRD0	Electrolytic	33 µF 16V
C55,56	YW5CH101J5VB	Ceramic	100 pF
C57,58	YWSK1C106KRC	Electrolytic	10 µF 16V
C59	SK21C336KRD0	Electrolytic	33 µF 16V
C60,61	ECEA1CSN100	Electrolytic	10 µF 16V
C62	YW5F104Z2VB	Ceramic	0.1 µF
C63,64	YWRJ325V470M	Electrolytic	47 µF 25V
C65	ECEA1ASN100	Electrolytic	10 µF 10V
C66	SK1A336KRD0	Electrolytic	36 µF 10V
C67	SK1E106KRD0	Electrolytic	10 µF 25V
C68	YWRJ325V470M	Electrolytic	47 µF 25V
C69,100	YW5F104Z2VB	Ceramic	0.1 µF
C101	YWRJ325V470M	Electrolytic	47 µF 25V
L1	YFLH10D500K	Coil	50 µH
L2	YWNL32101K	Coil	100 µH
SW1	YWSKHHBS	Push Switch	
SW2	YWSSSS923L4	Slide Switch	
SW3	YWSSSS922L4	Slide Switch	
SW4	YWSSSS923L4	Slide Switch	
SW5-7	YFKHH10914	Special Switch	
SW8	YWSKHHBS	Push Switch	
SW9	YWSSSS923L4	Slide Switch	
SW10	YWS2150	Rotary Switch	
SW11	YFSPH222A	Push Switch	
SW12	YWSSSS922L4	Slide Switch	
SW13	YWCS412YTB	Rotary Switch	
SW14	YFSPH222A	Push Switch	
CF	YWBP53A68	Filter	
CN1	FCN235P068G0	68-pin Connector	
CN2-4	FCN214J034GA	34-pin Connector	
CN5	FCN214J050GA	50-pin Connector	
CN6,7	FCN214J034GA	34-pin Connector	
CN8	FCN214J050GA	50-pin Connector	

REF.NO.	PART NO.	DESCRIPTION
CN9	YWE111200000	12-pin Connector
CN10	YWILY5PS15T2	5-pin Connector
CN11	YWILY3PS15T2	3-pin Connector
CN12	YWE041200000	4-pin Connector
CN13	ILY14PS15T2	14-pin Connector
CN14	ILY10PS15T2	10-pin Connector
CN15	YWE081200000	8-pin Connector
CN16	ILY6PS15L2EF	6-pin Connector
CN17	YWE051100000	5-pin Connector
CN18	ILY10PS15T2	10-pin Connector
CN19	YWE061100000	6-pin Connector
CN20	YWE081100000	8-pin Connector
CN101	ILY3PS15L2EF	3-pin Connector
CN102	ILY4PS15L2EF	4-pin Connector
TP4,5	YW32BM5A	Test-pin
TP1-3	YWRCT2125TPV	Test Point
TP6-8	YWRCT2125TPV	Test Point
M87	YWV2TA0304A3	Mounting Bracket

SIDE SWITCH BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB9	YWVKCF500E4A	Printed Circuit Board Assy
R1,2	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R3,4	ERJ3GEYJ303	Carbon 30K ohms 1/16W
R5	ERJ3GEYJ562	Carbon 5.6K ohms 1/16W
R6,7	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R8	ERJ3GEYJ303	Carbon 30K ohms 1/16W
R9	ERJ3GEYJ822	Carbon 8.2K ohms 1/16W
R10	ERJ3GEYJ303	Carbon 30K ohms 1/16W
R11-13	ERJ3GEYJ183	Carbon 18K ohms 1/16W
R14,15	ERJ3GEYJ303	Carbon 30K ohms 1/16W
R16	ERJ3GEYJ223	Carbon 22K ohms 1/16W
C1-4	YW5F104Z2VB	Ceramic 0.1 µF
SW1-3	YWMTG3103G1	Toggle Switch
SW4	YWMTKG7211G	Toggle Switch
M88	YWV2SA2418A3	Mounting Angle

FRONT SWITCH BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB10	YWVKDF500P4A	Printed Circuit Board Assy
R1,2	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R3,4	ERJ3GEYJ303	Carbon 30K ohms 1/16W
R5	ERJ3GEYJ562	Carbon 5.6K ohms 1/16W
R6	ERJ3GEYJ822	Carbon 8.2K ohms 1/16W
R7,8	ERJ3GEYJ103	Carbon 10K ohms 1/16W
R9,10	ERJ3GEYJ303	Carbon 30K ohms 1/16W
R11	ERJ3GEYJ223	Carbon 22K ohms 1/16W
C1-4	YW5F104Z2VB	Ceramic 0.1 µF
SW1	YWMTG3105G1	Toggle Switch
SW2	YWMTG3103G1	Toggle Switch
CN1	ILY2PS15T2	2-pin Connector

POWER BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB11 (RTL)	YWVKZF500P2A	Printed Circuit BoardAssy
IC1	YWMB3782PF	IC
IC2	NJM2903M	IC
IC3	YW78L05UATE2	IC
IC4	TC5081AP	IC
IC5	UPD74HCU04G	IC
IC6	UPD74HC393G	IC
IC7	AN6701S	IC
IC8	NJM2903M	IC
IC9	NJM2904M	IC
IC10	NJM2902M	IC
Q1-13	2SD1819-QRS	Transistor
Q14	2SB1218-QRS	Transistor
Q15	2SD1819-QRS	Transistor
Q16	2SB1218-QRS	Transistor
Q17	2SD1819-QRS	Transistor
Q18	2SB1218-QRS	Transistor
Q19	2SD1819-QRS	Transistor
Q20	2SJ132	FET
Q21	2SD1819-QRS	Transistor
Q22	2SB1218-QRS	Transistor
Q23-25	2SJ132	FET
Q26	2SA1615-LK	Transistor
Q27,28	2SD1819-QRS	Transistor
Q29	2SB1218-QRS	Transistor
Q31,32	2SJ132	FET
Q33	2SA1329	Transistor
Q34,35	2SD1819-QRS	Transistor
Q36	2SB1176-PQ	Transistor
Q37	2SA1244Y	Transistor

REF.NO.	PART NO.	DESCRIPTION	
Q38	2SD1819-QRS	Transistor	
Q39	2SD1979	Transistor	
Q40	2SB1218-QRS	Transistor	
Q41	2SC3074Y	Transistor	
Q42	2SB1218-QRS	Transistor	
Q43	2SA1244Y	Transistor	
Q44	2SD1819-QRS	Transistor	
D1	V03G	Diode	
D2	MA3062	Diode	
D3	MA141K	Diode	
D4	YWFC51M23	Diode	
D5-7	YWERB83004	Diode	
D9	MA141K	Diode	
D10-17	YWERA81004	Diode	
R1,3	ERJ3GEYJ393	Carbon	39K ohms 1/16W
R4,5	ERJ3GEYJ393	Carbon	39K ohms 1/16W
R7-9	ERJ3GEYJ393	Carbon	39K ohms 1/16W
R11-13	ERJ3GEYJ393	Carbon	39K ohms 1/16W
R14	ERJ3GEYJ823	Carbon	82K ohms 1/16W
R15	ERJ3GEYJ512	Carbon	5.1K ohms 1/16W
R16	ERJ3GEYJ153	Carbon	15K ohms 1/16W
R17	ERJ3GEYJ823	Carbon	82K ohms 1/16W
R18	ERJ3GEYJ512	Carbon	5.1K ohms 1/16W
R19,21	ERJ3GEYJ393	Carbon	39K ohms 1/16W
R22	ERJ3GEYJ393	Carbon	39K ohms 1/16W
R23	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R24	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R25,26	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R27	YWR0816P363D	Metal	36K ohms 1/16W
R28	YWR0816R623D	Metal	62K ohms 1/16W
R29	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R30	ERJ3GEYJ224	Carbon	220K ohms 1/16W
R31	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R32,33	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R34	ERJ3GEYJ393	Carbon	39K ohms 1/16W
R35	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R36	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R37	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R38	ERJ3GEYJ562	Carbon	5.6K ohms 1/16W
R39	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R40	YWR0816R164D	Metal	160K ohms 1/16W
R41	YWR0816R753D	Metal	75K ohms 1/16W
R42	YWR0816R244D	Metal	240K ohms 1/16W
R43	YWR0816R753D	Metal	75K ohms 1/16W
R44	YWR0816R134D	Metal	130K ohms 1/16W
R45	YWR0816R753D	Metal	75K ohms 1/16W
R46	YWR0816P562D	Metal	5.6K ohms 1/16W
R47	YWR0816P432D	Metal	4.3K ohms 1/16W
R48	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R49	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R50	ERJ3GEYJ100	Carbon	10 ohms 1/16W
R51,52	ERJ3GEYJ105	Carbon	1M ohms 1/16W
R53	YWR0816P562D	Metal	5.6K ohms 1/16W
R54,55	YWR0816P152D	Metal	1.5K ohms 1/16W
R56	YWR0816P103D	Metal	10K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R57	YWR0816P183D	Metal	18K ohms 1/16W
R58,59	ERJ3GEYJ562	Carbon	5.6K ohms 1/16W
R60,61	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R62	YWR0816P332D	Metal	3.3K ohms 1/16W
R63	YWR0816P562D	Metal	5.6K ohms 1/16W
R64	YWR0816P133D	Metal	13K ohms 1/16W
R65	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R66	ERJ3GEYJ303	Carbon	30K ohms 1/16W
R67	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R68	ERJ3GEYJ154	Carbon	150K ohms 1/16W
R69	YWR0816R104D	Metal	100K ohms 1/16W
R70	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R71	YWR0816P183D	Metal	18K ohms 1/16W
R72	YWR0816P243D	Metal	24K ohms 1/16W
R73	YWR0816R304D	Metal	300K ohms 1/16W
R74	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R75-77	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R78	ERJ3GEYJ683	Carbon	68K ohms 1/16W
R79	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R80-82	ERJ3GEYJ201	Carbon	200 ohms 1/16W
R84	YWR0816R433D	Metal	43K ohms 1/16W
R85,86	YWR0816P682D	Metal	6.8K ohms 1/16W
R87	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R88	YWR0816P183D	Metal	18K ohms 1/16W
R89	YWR0816P242D	Metal	2.4K ohms 1/16W
R90	YWR0816P472D	Metal	4.7K ohms 1/16W
R91	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R93,94	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R95	YWR0816R683D	Metal	68K ohms 1/16W
R96	YWR0816P512D	Metal	5.1K ohms 1/16W
R97	YWR0816P562D	Metal	5.6K ohms 1/16W
R98	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R99	YWR0816P363D	Metal	36K ohms 1/16W
R100	YWR0816P432D	Metal	4.3K ohms 1/16W
R101	YWR0816P472D	Metal	4.7K ohms 1/16W
R102,103	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R104	ERJ3GEYJ182	Carbon	1.8K ohms 1/16W
R105	ERDS2TJ471	Carbon	470 ohms 1/4W
R106	ERJ3GEYJ471	Carbon	470 ohms 1/16W
R107	YWR0816R154D	Metal	150K ohms
R108	YWR0816P332D	Metal	3.3K ohms 1/16W
R109	YWR0816P562D	Metal	5.6K ohms 1/16W
R110	ERJ3GEYJ471	Carbon	470 ohms 1/16W
R111	YWR0816R823D	Metal	82K ohms 1/16W
R112	YWR0816P133D	Metal	13K ohms 1/16W
R113	YWR0816P153D	Metal	15K ohms 1/16W
R114	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R115	YWR0816P333D	Metal	33K ohms 1/16W
R116	YWR0816P822D	Metal	8.2K ohms 1/16W
R117	YWR0816P123D	Metal	12K ohms 1/16W
R118	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R119	YWR0816R134D	Metal	130K ohms 1/16W
R120	YWR0816P472D	Metal	4.7K ohms 1/16W
R121	YWR0816P822D	Metal	8.2K ohms 1/16W
VR1	EVML1GA00B52	Variable Resistor	500 ohms

REF.NO.	PART NO.	DESCRIPTION
VR2	EVML3GA00B23	Variable Resistor 2K ohms
C1	YWR2S25V4R7M	Electrolytic 4.7 µF 25V
C2	ECA1EFZ181	Electrolytic 180 µF 25V
C4	ECSF1VE334	Tantalum 0.33 µF 35V
C5	ECSF1VE475	Tantalum 4.7 µF 35V
C6,7	ECSF1VE334	Tantalum 0.33 µF 35V
C8,9	YW5X103K2VB	Ceramic 0.01 µF
C10	YW5F104Z2VB	Ceramic 0.1 µF
C11	YW5X103K2VB	Ceramic 0.01 µF
C12	R2S6R3V101M	Electrolytic 100 µF 6.3V
C13	YW5F104Z2VB	Ceramic 0.1 µF
C14	YF400104FZT	Ceramic 0.1 µF
C15	YW5CH471J5VB	Ceramic 470 pF
C16	YW400102CHJT	Ceramic 1000 pF
C17	YW5CH470J5VB	Ceramic 47 pF
C18,19	YW5F104Z2VB	Ceramic 0.1 µF
C20,21	YW5X103K2VB	Ceramic 0.01 µF
C22	ECSF1CE105	Tantalum 1 µF 16V
C23	YW5F104Z2VB	Ceramic 0.1 µF
C25	YF400683XKT	Ceramic 0.068 µF
C26	YWR2S50VR47M	Electrolytic 0.47 µF 50V
C27,29	YF400683XKT	Ceramic 0.068 µF
C31,32	YW5F104Z2VB	Ceramic 0.1 µF
C33	YWR2S16V100M	Electrolytic 10 µF 16V
C35	YWR2S16V330M	Electrolytic 33 µF 16V
C36	YWR2S25V100M	Electrolytic 10 µF 25V
C37	ECA1EFZ221	Electrolytic 220 µF 25V
C38	YW20SA100M	Electrolytic 10 µF
C39	YWR2S25V4R7M	Electrolytic 4.7 µF 25V
C40,41	ECA1AFZ331	Electrolytic 330 µF 10V
C43	YW5F104Z2VB	Ceramic 0.1 µF
C44	YW5X103K2VB	Ceramic 0.01 µF
C45	ECA0JFQ681	Electrolytic 680 µF 6.3V
C46	YW5F104Z2VB	Ceramic 0.1 µF
C47	YWR2S50VR47M	Electrolytic 0.47 µF 50V
C48,49	ECA1CFZ221	Electrolytic 220 µF 16V
C50	YW5X103K2VB	Ceramic 0.01 µF
C51	ECA1AFQ331	Electrolytic 330 µF 10V
C52,53	YW5F104Z2VB	Ceramic 0.1 µF
C54	YWR2S16V100M	Electrolytic 10 µF 16V
C55	YW5CH331J5VB	Ceramic 330 pF
C56	ECQM1H473JZ	Plastic 0.047 µF 50V
C57	ECA1HFZ390	Electrolytic 39 µF 50V
C58	YW5X103K2VB	Ceramic 0.01 µF
C59	ECA1VFQ820	Electrolytic 82 µF 35V
C60	YW5F104Z2VB	Ceramic 0.1 µF
C61	ECA1EFZ121	Electrolytic 120 µF 25V
C62	YW5X103K2VB	Ceramic 0.01 µF
C63	ECA1CFQ471	Electrolytic 470 µF 16V
C64	YW5F104Z2VB	Ceramic 0.1 µF
C65	ECA1AFZ331	Electrolytic 330 µF 10V
C66	YW5X103K2VB	Ceramic 0.01 µF
C67	ECA0JFQ471	Electrolytic 470 µF 6.3V
C68	YW5F104Z2VB	Ceramic 0.1 µF
C69	ECA1EFZ121	Electrolytic 120 µF 25V
C70	YW5X103K2VB	Ceramic 0.01 µF
C71	ECA1EFQ121	Electrolytic 120 µF 25V (HFQ)
C72	YW5F104Z2VB	Ceramic 0.1 µF
C73	YW5CH101J5VB	Ceramic 100 pF
C74	YWR2S16V100M	Electrolytic 10 µF 16V
C75	YW5F104Z2VB	Ceramic 0.1 µF
CT1	YWCDY40AS	Trimmer Capacitor 40 µF
L1	ELEPH271KA	Coil 270 µH
L2	YWS100574220	Coil 22 µH
L3,5	YFLH10D101K	Coil 100 µH
L6	YFLH10D500K	Coil 50 µH
L7	S100434391K	Coil 390 µH
L8	S100434271K	Coil 270 µH
L9,10	S100434561K	Coil 560 µH
T1	YWMCT05000	Low Freq Transformer
CN1	FCN215Q034GA	34-pin Connector
TP1-11	YW32BM7R5	Test-pin
M89	YWV2HA1074A2	Shield Case
M90	YWV2HA1075A2	Shield Cover

REC SWITCH BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB12	YWVRZF500P6A	Printed Board
SW1	YWSKHHAL	Push Switch

ACCESSORY PARTS/PACKAGING PARTS

REF.NO.	PART NO.	DESCRIPTION
M100	YWV8QA2952AN	Operating Instructions
M101	YWV8RA0236AN	Service Center List
M102	YFV8SA0009CN	UL Safty Notice
M103	XZB26X40C05	Polyethylene Bag
M104	XZB35X50C05	Polyethylene Bag
M106	YWV9CA1956AN	Packaging Assy

MICROPHONE HOLDER WV-MH500

MISCELLANEOUS

REF.NO.	PART NO.	DESCRIPTION
CN121	YWXLR-3-11C	Connector
M2	YWV2TA0182A2	Mic Holder A
M3	YWV2TB0183A1	Mounting Bracket
M4	YWV2TD0066A3	Mic Holder B
M5	YFV5VA0038A3	Mic Pad A
M6	YWV5VB0038A4	Mic Pad B
M7	YWV7QA2890A4	Main Label
M8	YFV1FA0021B4	Nut
M9	YFV1JA0001B4	Bolt
M10	YWV5GA0136A4	Cap Screw
M11	YWV5GA0138A4	Cap

MIC BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB1 (RTL)	YWVKYF500P2A	Printed Circuit BoardAssy
C1,2	ECEA1CKN100	Electrolytic 10 µF 16V
SW1	YWSSSS922L4	Slide Switch
CN1	YWILY3PS15T2	3-pin Connector

ACCESSORY PARTS/PACKAGING PARTS

REF.NO.	PART NO.	DESCRIPTION
M15	YWV8QA2864AN	Operating Instructions
M16	YWT20X25C03	Polyethylene Bag
M17	YWV8FA0137A4	Packaging Label
M18	YWV9CA1296AN	Packaging Assy

CAMERA ADAPTOR WV-AD500

MISCELLANEOUS

REF.NO.	PART NO.	DESCRIPTION
JK101	YWYAE329800A	Jack
SW101	YWMTM7101G	Toggle Switch
CF101	YWTRCN281613	Filter
F2	XBA2C50ET0A	Current Fuse 5A 250V
CN101,102	YWBNC-BRZ-1	BNC Connector
CN103	YWTCS7848101	S-VHS Connector
CN104	XLR-4-32F512	EXT DC Connector
CN105	YWSRB2A2126P	Connector
M1	YWV5EC0701A1	Main Cover
M2	YWV2SA1405A4	Mounting Angle
M3	YFV7MA0099A4	Safety Label
M4	YWV5VA0058A2	Pad
M5	YWV7QA2961A4	Main Label
M6	YWV7SA1683A2	Label
M7	YWV7SA1684A4	Label
M8	YWV7MA0223A4	Fuse Label
M9	YWVMP2970	Guide
M10	YFV2EB0028B4	Guide
M11	YWV5EB0702A2	Rear Cover
M12	YWV5EC0703A1	Cover
M13	YWV5RA0250A3	Knob for Audio
M14	YFV2SA0200B4	Mounting Angle for DC Jack
M15	YWV2SA1404A4	Mounting Angle
M16	YWV2SA1419A4	Mounting Angle
M17	YWV2SA1420A4	Mounting Angle
M18	YWV2SA2420A4	Mounting Angle
M19	YWV6GA0129A3	Plate
M20	YWV6GA0130A4	Push Plate
M21	YWV6GA0189A4	Plate
M22	YWV6GA0233A4	Plate
M23	YWV2JA0095A4	Bracing Strut
M24	YWV4HA0123A4	Shaft
M25	YFA2PA0053B4	Insulator
M26	YWV4JA0286A4	Spring
M27	YWV4JA0291A4	Spring
M28	YWA2PA0054A4	Washer
M29	YWV1EA0190A4	Special Screw
M30	YWV5EA1055A2	Handle Cover
M31	YWV6AA0030A1	Handle
M32	YWV4JA0152A4	Spring
M33	4G28145	Spring
M34	YFHOLEPLUG10	Barrier
M35	YWV1EA0148A4	Special Screw
M36	YWV1EA0149A4	Special Screw
M37	YWV1KA0039A4	Washer
M38	YWFAC17XFM2	Special Screw
M39	YWV5MA0046A4	Shoe
M42	YWV7MB0274A4	Fuse Change Label

REF.NO.	PART NO.	DESCRIPTION
	VIDEO BOARD	
PCB1 (RTL)	YWVKBAD50P1A	Printed Circuit Board Assy
IC1	NJM2904M	IC
IC2,3	NJM2903M	IC
IC4	YWUPD4023BG	IC
IC5	YWM51957BFP	IC
IC6	YWUPD4023BG	IC
IC7	YWUPD4050BG	IC
IC8	NJM4556M	IC
IC9	NJM2903M	IC
IC10	YWCXA1229M	IC
IC11	YWUPD4052BG	IC
IC12	YWNJM2263M	IC
IC13	YWUPD4052BG	IC
IC14	YWNJM2263M	IC
IC15	YWUPD4052BG	IC
IC16,17	YWNJM2263M	IC
IC18,19	YWNJM2244M	IC
IC20	YWUPD4053BG	IC
IC21	NJM2903M	IC
IC22	NJM2904M	IC
IC23	YWTC4S81FR	IC
IC24	YWTC7S04F	IC
IC25	YWTC4S81FR	IC
Q1	2SB766-RS	Transistor
Q2	2SD874-RS	Transistor
Q4	2SD1820-QRS	Transistor
Q7-12	2SD1819-QRS	Transistor
Q13	2SD1820-QRS	Transistor
Q14	UMZ1	Transistor
Q17	UMX2	Transistor
Q19	2SC3931-CD	Transistor
Q20	UMX2	Transistor
Q21	2SD1819-QRS	Transistor
Q23	UMX2	Transistor
Q25	2SC3931-CD	Transistor
Q26	UMX2	Transistor
Q27	2SD1819-QRS	Transistor
Q29	UMX2	Transistor
Q31	2SC3931-CD	Transistor
Q32	UMX2	Transistor
Q33	2SD1819-QRS	Transistor
Q34	UMX2	Transistor
Q36	2SC3931-CD	Transistor
Q37	UMX2	Transistor
Q39	2SC3931-CD	Transistor
Q40	UMX2	Transistor
Q42	2SC3931-CD	Transistor
Q43	2SD1819-QRS	Transistor
Q44	2SB1218-QRS	Transistor
Q45	2SD1819-QRS	Transistor
Q46	XP4501	Transistor

REF.NO.	PART NO.	DESCRIPTION	
Q48	UMZ1	Transistor	
D1-3	MA141WK	Diode	
D9	MA141K	Diode	
R1,2	YWR0816P103D	Metal	10K ohms 1/16W
R3	YWR0816P123D	Metal	12K ohms 1/16W
R4	YWR0816P113D	Metal	11K ohms 1/16W
R5	ERJ3GEYJ471	Carbon	470 ohms 1/16W
R6	ERJ3GEYJ821	Carbon	820 ohms 1/16W
R7	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R8	ERJ3GEYJ154	Carbon	150K ohms 1/16W
R9,10	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R11	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R13	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R14	ERJ3GEYJ203	Carbon	20K ohms 1/16W
R15	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R16	ERJ3GEYJ392	Carbon	3.9K ohms 1/16W
R17	ERJ3GEYJ182	Carbon	1.8K ohms 1/16W
R18	ERJ3GEYJ152	Carbon	1.5K ohms 1/16W
R19	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R20	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R21	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R22	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R25	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R26	ERJ3GEYJ154	Carbon	150K ohms 1/16W
R30	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R31	ERJ3GEYJ222	Carbon	2.2K ohms 1/16W
R32	ERJ3GEYJ163	Carbon	16K ohms 1/16W
R33	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R34	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R35	ERJ3GEYJ133	Carbon	13K ohms 1/16W
R36	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R37	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R38	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R39,40	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R41	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R42	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R43	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R44,45	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R46	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R47	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R48	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R49	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R50-52	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R53,54	YWR0816P222D	Metal	2.2K ohms 1/16W
R55	ERJ3GEYJ510	Carbon	51 ohms 1/16W
R56	YWR0816R513D	Metal	51K ohms 1/16W
R57	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R58,59	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R60	ERJ3GEYJ243	Carbon	24K ohms 1/16W
R61	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R62,63	ERJ3GEYJ162	Carbon	1.6K ohms 1/16W
R64	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R65,66	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R67	ERJ3GEYJ202	Carbon	2K ohms 1/16W
R68	ERJ3GEYJ272	Carbon	2.7K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R69	ERJ3GEYJ242	Carbon	2.4K ohms 1/16W
R70,71	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R72	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R73	ERJ3GEYJ911	Carbon	910 ohms 1/16W
R74	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R75	ERJ3GEYJ243	Carbon	24K ohms 1/16W
R76	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R77,78	ERJ3GEYJ162	Carbon	1.6K ohms 1/16W
R79	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R80,81	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R82	ERJ3GEYJ202	Carbon	2K ohms 1/16W
R83	ERJ3GEYJ272	Carbon	2.7K ohms 1/16W
R84	ERJ3GEYJ242	Carbon	2.4K ohms 1/16W
R85,86	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R87	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R88	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R89	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R90	ERJ3GEYJ243	Carbon	24K ohms 1/16W
R91	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R92	ERJ3GEYJ162	Carbon	1.6K ohms 1/16W
R93	ERJ3GEYJ362	Carbon	3.6K ohms 1/16W
R94	ERJ3GEYJ242	Carbon	2.4K ohms 1/16W
R95,96	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R97	ERJ3GEYJ362	Carbon	3.6K ohms 1/16W
R98	ERJ3GEYJ272	Carbon	2.7K ohms 1/16W
R99	ERJ3GEYJ242	Carbon	2.4K ohms 1/16W
R100,101	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R102	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R103	ERJ3GEYJ162	Carbon	1.6K ohms 1/16W
R104	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R106	YWR0816P273D	Metal	27K ohms 1/16W
R108	ERJ3GEYJ680	Carbon	68 ohms 1/16W
R109	ERJ3GEYJ471	Carbon	470 ohms 1/16W
R111	ERJ3GEYJ680	Carbon	68 ohms 1/16W
R112	ERJ3GEYJ471	Carbon	470 ohms 1/16W
R113	ERJ3GEYJ680	Carbon	68 ohms 1/16W
R114	ERJ3GEYJ471	Carbon	470 ohms 1/16W
R115	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R116	ERJ3GEYJ243	Carbon	24K ohms 1/16W
R117	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R118	ERJ3GEYJ162	Carbon	1.6K ohms 1/16W
R119	ERJ3GEYJ242	Carbon	2.4K ohms 1/16W
R120,121	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R122	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R123	ERJ3GEYJ162	Carbon	1.6K ohms 1/16W
R124	ERJ3GEYJ680	Carbon	68 ohms 1/16W
R125	ERJ3GEYJ471	Carbon	470 ohms 1/16W
R126	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R127	ERJ3GEYJ243	Carbon	24K ohms 1/16W
R128	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R129	ERJ3GEYJ362	Carbon	3.6K ohms 1/16W
R130	ERJ3GEYJ242	Carbon	2.4K ohms 1/16W
R131,132	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R133	ERJ3GEYJ362	Carbon	3.6K ohms 1/16W
R134	ERJ3GEYJ162	Carbon	1.6K ohms 1/16W
R135	ERJ3GEYJ680	Carbon	68 ohms 1/16W
R136	ERJ3GEYJ471	Carbon	470 ohms 1/16W
R137	ERJ3GEYJ750	Carbon	75 ohms 1/16W
R138	ERJ3GEYJ243	Carbon	24K ohms 1/16W
R139	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R140,141	ERJ3GEYJ362	Carbon	3.6K ohms 1/16W
R142	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R143	ERJ3GEYJ471	Carbon	470 ohms 1/16W
R144	ERJ3GEYJ243	Carbon	24K ohms 1/16W
R145	ERJ3GEYJ163	Carbon	16K ohms 1/16W
R146	ERJ3GEYJ680	Carbon	68 ohms 1/16W
R147,148	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R149	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R150	ERJ3GEYJ243	Carbon	24K ohms 1/16W
R151	ERJ3GEYJ123	Carbon	12K ohms 1/16W
R152	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R153	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R154	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R155	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R156	ERJ3GEYJ750	Carbon	75 ohms 1/16W
R157,158	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R159	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R160	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R161	ERJ3GEYJ563	Carbon	56K ohms 1/16W
R162	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R163	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R164	YWR0816P243D	Metal	24K ohms 1/16W
R165	YWR0816P103D	Metal	10K ohms 1/16W
R167	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R168	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R169	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R170	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R172	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R173	ERJ3GEYJ821	Carbon	820 ohms 1/16W
R174	ERJ3GEYJ102	Carbon	1K ohms 1/16W
R175	ERJ3GEYJ471	Carbon	470 ohms 1/16W
R176	ERJ3GEYJ821	Carbon	820 ohms 1/16W
R177	ERJ3GEYJ182	Carbon	1.8K ohms 1/16W
R178	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R179	ERJ3GEYJ433	Carbon	43K ohms 1/16W
R180	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R181	ERJ3GEYJ433	Carbon	43K ohms 1/16W
R182	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R183	ERJ3GEYJ433	Carbon	43K ohms 1/16W
R184	ERJ3GEYJ821	Carbon	820 ohms 1/16W
R185	ERJ3GEYJ511	Carbon	510 ohms 1/16W
R186	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R187	ERJ3GEYJ433	Carbon	43K ohms 1/16W
R188,189	ERJ3GEYJ821	Carbon	820 ohms 1/16W
R190	ERJ3GEYJ242	Carbon	2.4K ohms 1/16W
R191,192	ERJ3GEYJ101	Carbon	100 ohms 1/16W
R196	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R212	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R213	ERJ3GEYJ161	Carbon	160 ohms 1/16W
R214,215	ERJ3GEYJ680	Carbon	68 ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R216	ERJ3GEYJ124	Carbon	120K ohms 1/16W
R217-219	ERJ3GEY0R00	Carbon	0 ohms 1/16W
R222	ERJ3GEY0R00	Carbon	0 ohms 1/16W
VR2	EVM7JGA30B23	Variable Resistor	2K ohms
VR3	EVM7JGA30B13	Variable Resistor	1K ohms
VR4	EVM7JGA30B23	Variable Resistor	2K ohms
VR5-10	EVM7JGA30B13	Variable Resistor	1K ohms
C1	ECEV1CV470	Electrolytic	47 µF 16V
C2	ECEV1CV100	Electrolytic	10 µF 16V
C3	ECEV1AA470P	Electrolytic	47 µF 10V
C4	ECEV1CV470	Electrolytic	47 µF 16V
C5	ECEV1AA470P	Electrolytic	47 µF 10V
C6	ECEV1HV010	Electrolytic	1 µF 50V
C7	ECEV1CV470	Electrolytic	47 µF 16V
C9	ECEV1CV100	Electrolytic	10 µF 16V
C10	ECEV1CV470	Electrolytic	47 µF 16V
C11	ECEV1CV100	Electrolytic	10 µF 16V
C12,13	YW5X102K5VB	Ceramic	1000 pF
C14	ECEV1AA470P	Electrolytic	47 µF 10V
C15	YW5F104Z2VB	Ceramic	0.1 µF
C16	ECEV0JA470	Electrolytic	47 µF 6.3V
C17	ECEV1CV470	Electrolytic	47 µF 16V
C18	ECEV1AA470P	Electrolytic	47 µF 10V
C19	YW5CH120J5VB	Ceramic	12 pF
C20	ECEV1AA470P	Electrolytic	47 µF 10V
C21	YW5CH110J5VB	Ceramic	11 pF
C22,23	ECEV1AA470P	Electrolytic	47 µF 10V
C24	YW5CH120J5VB	Ceramic	12 pF
C25	ECEV1AA470P	Electrolytic	47 µF 10V
C26	YW5CH150J5VB	Ceramic	15 pF
C27,28	ECEV1AA470P	Electrolytic	47 µF 10V
C29	YW5CH100J5VB	Ceramic	10 pF
C30	ECEV1AA470P	Electrolytic	47 µF 10V
C31	YW5CH080D5VB	Ceramic	8 pF
C32	ECEV1AA470P	Electrolytic	47 µF 10V
C33-35	ECEV1HV010	Electrolytic	1 µF 50V
C36,37	ECEV1AA470P	Electrolytic	47 µF 10V
C38	ECEV1CV100	Electrolytic	10 µF 16V
C39	ECEV1AN330	Electrolytic	33 µF 10V
C40	ECEV1AA470P	Electrolytic	47 µF 10V
C41	ECEA0JU222	Electrolytic	2200 µF 6.3V
C43	ECEV1AN330	Electrolytic	33 µF 10V
C44	ECEV1AA470P	Electrolytic	47 µF 10V
C45	ECEA0JU222	Electrolytic	2200 µF 6.3V
C47	ECEV1AN330	Electrolytic	33 µF 10V
C48	ECEV1CV470	Electrolytic	47 µF 16V
C49	ECA0JM332	Electrolytic	3300 µF 6.3V
C51	ECEV1CV470	Electrolytic	47 µF 16V
C52	ECEV1AA470P	Electrolytic	47 µF 10V
C53	YW5CH120J5VB	Ceramic	12 pF
C54	ECEV1AA470P	Electrolytic	47 µF 10V
C55	ECEV1AN330	Electrolytic	33 µF 10V
C56	ECEV1AA470P	Electrolytic	47 µF 10V
C57	ECEV0GV221	Electrolytic	220 µF 4V
C59	ECEV1AA470P	Electrolytic	47 µF 10V

REF.NO.	PART NO.	DESCRIPTION	
C60	YW5CH070J5VB	Ceramic	7 pF
C61	ECEV1AA470P	Electrolytic	47 µF 10V
C62	ECEV1CAN4R7R	Electrolytic	4.7 µF 16V
C63	ECEV1AA470P	Electrolytic	47 µF 10V
C64	ECEA0JU332	Electrolytic	3300 µF 6.3V
C66	ECEV1AA470P	Electrolytic	47 µF 10V
C67	ECEV1CAN4R7R	Electrolytic	4.7 µF 16V
C68	ECEV1AA470P	Electrolytic	47 µF 10V
C69	ECEA0JU332	Electrolytic	3300 µF 6.3V
C71	ECEV1AN330	Electrolytic	33 µF 10V
C72	ECEV1CV470	Electrolytic	47 µF 16V
C73,74	ECEV1AA470P	Electrolytic	47 µF 10V
C75	ECEV1AN330	Electrolytic	33 µF 10V
C76,77	ECEV1AA470P	Electrolytic	47 µF 10V
C80	YW5F104Z2VB	Ceramic	0.1 µF
C81	YW5CH180J5VB	Ceramic	18 pF
C82,83	ECEV1AA470P	Electrolytic	47 µF 10V
C85	ECEV1CN100	Electrolytic	10 µF 16V
C88	YW5X102K5VB	Ceramic	1000 pF
L1	YWNL32330K	Coil	33 µH
CF1	YWBP53A68	Filter	
CN1	FCN234J068GZ	68-pin Connector	
CN2	YWE141200000	14-pin Connector	
CN3	YWE051200000	5-pin Connector	
CN4	YWE041200001	4-pin Connector	
CN5	YWE071200003	7-pin Connector	
CN6	YWE061200003	6-pin Connector	
CN7	YWE041200000	4-pin Connector	
CN8	YWE051200001	5-pin Connector	
CN9	YWE061200000	6-pin Connector	
TP1-8	YWRCT2125TPV	Test Point	
TP10-12	YWRCT2125TPV	Test Point	

BRAKER BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB2 (RTL)	YWVKCAD50P1A	Printed Ciacuit Board Assy
CN1	YW8263061200	6-pin Connector
CN2,3	YW8263041200	4-pin Connector
CB1	TBC50310921	Braker
E1	YWSN5053	Fuse Holder

AUDIO BOARD

REF.NO.	PART NO.	DESCRIPTION	
PCB3 (RTL)	YWVKBAD50P2A	Printed Circuit Board Assy	
IC1	YWM5282FP	IC	
IC2	YWUPD4053BG	IC	
IC3	NJM386M	IC	
IC4	YWUPD4053BG	IC	
IC5	YWM5282FP	IC	
IC6	YWUPD4053BG	IC	
Q1	2SB1218-QRS	Transistor	
Q2	2SD1819-QRS	Transistor	
Q3,4	2SB1218-QRS	Transistor	
D1	MA4091M	Diode	
D2	LN21RPH	LED	Red
D3	MA153	Diode	
R1	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R2	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R3	ERJ3GEYJ221	Carbon	220 ohms 1/16W
R4	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R5	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R6	ERJ3GEYJ334	Carbon	330K 1/16W
R7	ERJ3GEYJ562	Carbon	5.6K ohms 1/16W
R8	ERJ3GEYJ753	Carbon	75K ohms 1/16W
R9	ERJ3GEYJ331	Carbon	330 ohms 1/16W
R11	ERJ3GEYJ100	Carbon	10 ohms 1/16W
R12	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R13	ERJ3GEYJ472	Carbon	4.7K ohms 1/16W
R14	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R15	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R16	ERJ3GEYJ512	Carbon	5.1K ohms 1/16W
R17	ERJ3GEYJ103	Carbon	10K ohms 1/16W
R18	ERJ3GEYJ104	Carbon	100K ohms 1/16W
R19	ERJ3GEYJ333	Carbon	33K ohms 1/16W
R20	ERDS2TJ100	Carbon	10 ohms 1/4W
R21	ERDS2FJ221	Carbon	220 ohms 1/4W
R22	ERJ3GEYJ223	Carbon	22K ohms 1/16W
R23	ERDS2TJ223	Carbon	22K ohms 1/4W
R24,25	ERJ3GEYJ392	Carbon	3.9K ohms 1/16W
R26	ERDS2TJ332	Carbon	3.3K ohms 1/4W
R27	ERJ3GEYJ561	Carbon	560 ohms 1/16W
R28	ERDS2TJ100	Carbon	10 ohms 1/4W
R29	ERDS2TJ330	Carbon	33 ohms 1/4W
R30	ERJ3GEYJ682	Carbon	6.8K ohms 1/16W
R31	ERJ3GEYJ332	Carbon	3.3K ohms 1/16W
R32	ERJ3GEYJ473	Carbon	47K ohms 1/16W
R33	ERJ3GEYJ303	Carbon	30K ohms 1/16W
R34	ERJ3GEYJ184	Carbon	180K ohms 1/16W
R35	ERJ3GEYJ392	Carbon	3.9K ohms 1/16W
R36	ERJ3GEYJ303	Carbon	30K ohms 1/16W
R37,38	ERJ3GEYJ393	Carbon	39K ohms 1/16W
VR1	EVJVJAF15B23	Variable Resistor 2KB ohms	
C1	YW5F104Z2VB	Ceramic	0.1 µF
C2	YW5CH101J5VB	Ceramic	100 pF
C3	ECST1VC335	Electrolytic	3.3 µF 35V
C4	YW5X152K5VB	Ceramic	1500 pF
C5	SK1C226KRD0	Electrolytic	22 µF 16V
C6	SK21A476KRD0	Electrolytic	47 µF 10V
C7,8	ECEV1AN330	Electrolytic	33 µF 10V
C9	YW5F473Z2VB	Ceramic	0.047 µF
C10	SK21A476KRD0	Electrolytic	47 µF 10V
C11	ECEV1AN330	Electrolytic	33 µF 10V
C12	ECEA1ASS102	Electrolytic	1000 µF 10V
C13	ECEV1CN100	Electrolytic	10 µF 16V
C14	ECEV1CV470	Electrolytic	47 µF 16V
C15	ECST1EC475	Tantalum	4.7 µF 25V
C16	YW5F104Z2VB	Ceramic	0.1 µF
C17	ECEA1CU102	Electrolytic	1000 µF 16V
C19	ECEV1AN330	Electrolytic	33 µF 10V
C21	ECEA1CU102	Electrolytic	1000 µF 16V
C22	ECEV1HNR47	Electrolytic	0.47 µF 50V
C23	SK1C226KRD0	Electrolytic	22 µF 16V
C24	YW5CH101J5VB	Ceramic	100 pF
C25	ECEV1HV010	Electrolytic	1 µF 50V
C26,27	SK31A106KRB	Electrolytic	10 µF 10V
CN1	YW16SDD4TS11	16-pin Connector	
CN2	YWE051200001	5-pin Connector	
CN3	YWE081200000	8-pin Connector	
CN4	YWE071200003	7-pin Connector	
CN5	YWE051200003	5-pin Connector	
JK1	YWHSJ0912050	Jack	
JK2	YWLJ23083080	Jack	
M45	YWA3CA0052A4	Parts Holder	

SWITCH BOARD

REF.NO.	PART NO.	DESCRIPTION
CB4 (RTL)	YWVKCAD50P2A	Printed Ciacuit Board Assy
1,2	YF2116104JT	Carbon 100K ohms 1/10W
W1-3	YWSSSS922L4	Slide Switch
W4	YWSSSS923L4	Slide Switch
W5	SSSS3434	Slide Switch
N1	YW16PEDT1PN1	16-pin Connector

ACCESSORY PARTS/PACKAGING PARTS

REF.NO.	PART NO.	DESCRIPTION
P100	YWPLUG-3	Plug
M50	YWV8QA2949AN	Operating Instructions
M56	XZB26X40C05	Polyethylene Bag
M57	YWV9CC1870AN	Packaging Assy

ENG/EFP KIT WV-S550

ACCESSORY PARTS/PACKAGING PARTS

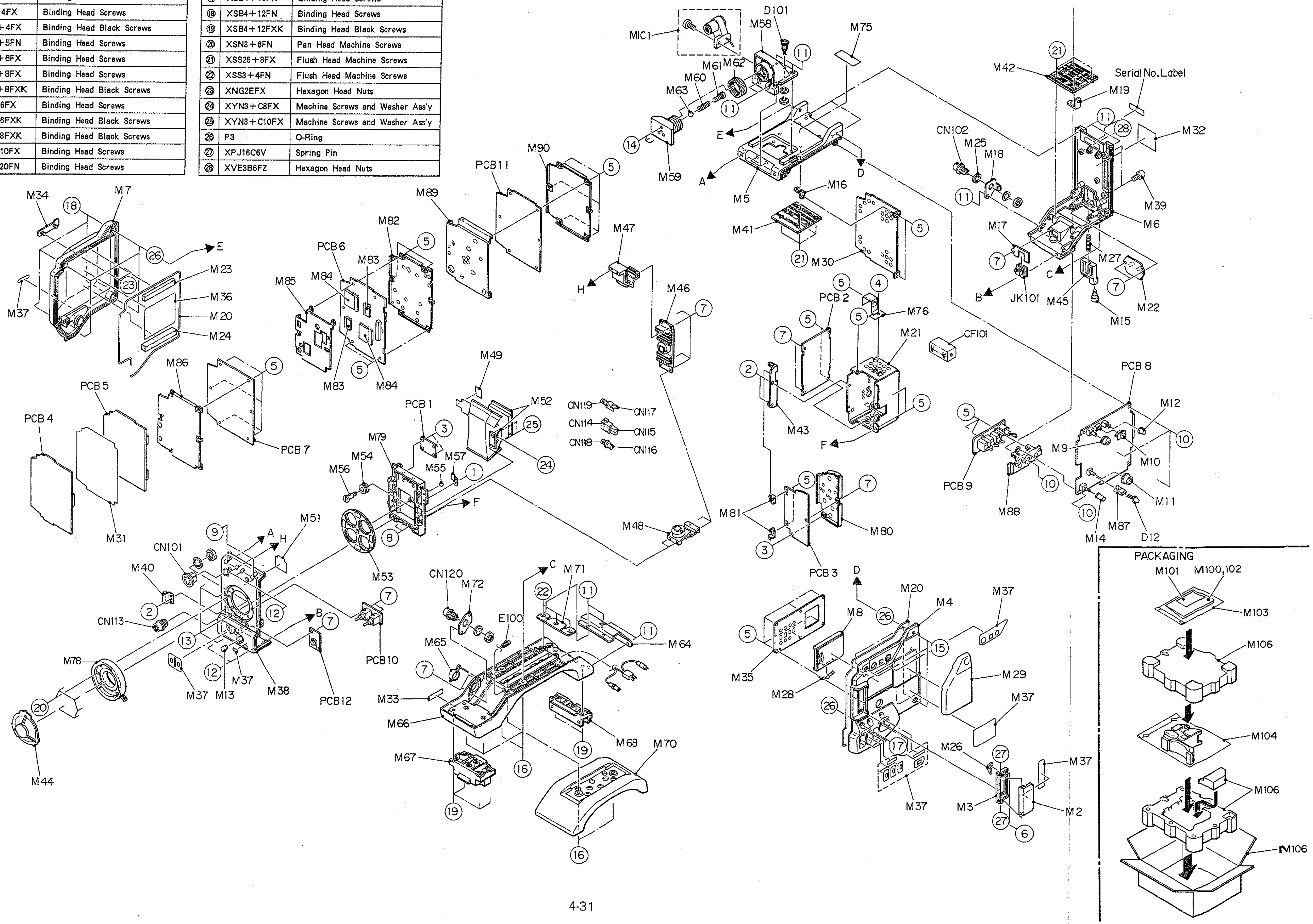
REF.NO.	PART NO.	DESCRIPTION
M100	YWV8QA2951AN	Operating Instructions for WV-S550
	YWV8QA2902AN	Operating Instructions for WV-CC500
M103	XZB26X40C05	Polyethylene Bag
M105	YWV9AA0704AN	EVF Slide Adaptor
M106	YWT20X25C03	Polyethylene Bag
M107	WV-MH500	Mic Holder
M109	YWT100X120X1	Polyethylene Bag
M110	WV-CC500	Carrying Case
M112	YWV9CB1937AN	Packaging Assy
M113	YWV5DA0298A3	Ornament Label A
M114	YWV5DA0383A3	Ornament Label B
M115	YWV7SA0283A3	Ornament Label C

EXPLODED VIEW OF COLOUR VIDEO CAMERA

○Number show screws, washers, nuts, etc.

No.	Screws	Description
①	XSB2+3FX	Binding Head Screws
②	XSB2+4FXK	Binding Head Black Screws
③	XSB2+4FX	Binding Head Screws
④	XSB3+4FX	Binding Head Screws
⑤	XSB26+4FX	Binding Head Black Screws
⑥	XSB26+5FN	Binding Head Screws
⑦	XSB26+6FX	Binding Head Screws
⑧	XSB26+8FX	Binding Head Screws
⑨	XSB26+8FXK	Binding Head Black Screws
⑩	XSB3+6FX	Binding Head Screws
⑪	XSB3+6FXK	Binding Head Black Screws
⑫	XSB3+8FXK	Binding Head Black Screws
⑬	XSB3+10FX	Binding Head Screws
⑭	XSB3+20FN	Binding Head Screws

No.	Screws	Description
⑮	XSB4+8FX	Binding Head Screws
⑯	XSB4+8FX	Binding Head Screws
⑰	XSB4+10FN	Binding Head Screws
⑱	XSB4+12FN	Binding Head Screws
⑲	XSB4+12FXK	Binding Head Black Screws
⑳	XSN3+6FN	Pan Head Machine Screws
㉑	XSS26+8FX	Flush Head Machine Screws
㉒	XSS3+4FN	Flush Head Machine Screws
㉓	XNG2EFX	Hexagon Head Nuts
㉔	XYN3+C8FX	Machine Screws and Washer Ass'y
㉕	XYN3+C10FX	Machine Screws and Washer Ass'y
㉖	P3	O-Ring
㉗	XPJ16C6V	Spring Pin
㉘	XVE3B6FZ	Hexagon Head Nuts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Serial No. Label
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B
JK101
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C
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CF101
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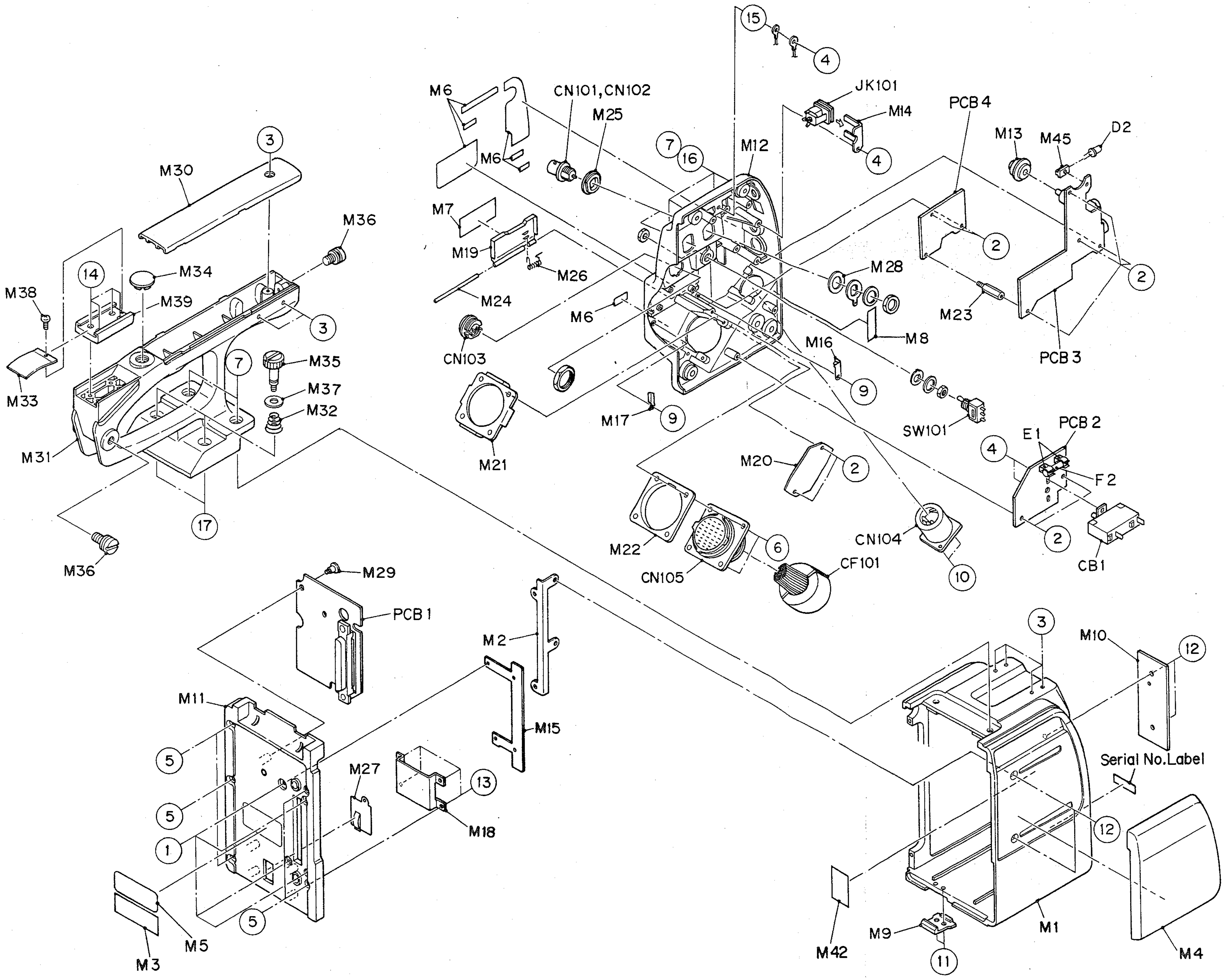
EXPLODED VIEW OF CAMERA ADAPTOR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CB1
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M42
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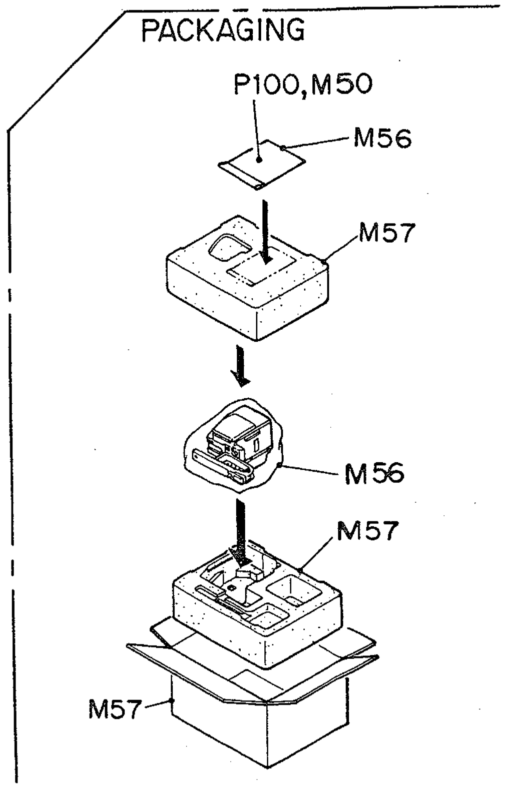
M1
M4

○Number show screws, washers, nuts, etc.

No.	Screws	Description
①	XSB26+4FXK	Binding Head Black Screws
②	XSB26+6FX	Binding Head Screws
③	XSB26+6FXK	Binding Head Black Screws
④	XSB3+6FX	Binding Head Screws
⑤	XSB3+6FXK	Binding Head Black Screws
⑥	XSB3+16FN	Binding Head Screws
⑦	XSB4+8FXK	Binding Head Black Screws
⑧	XSB4+10FN	Binding Head Screws
⑨	XSN2+4FX	Pan Head Machine Screws
⑩	XSN26+6FN	Pan Head Machine Screws
⑪	XSS3+6FN	Flush Head Machine Screws
⑫	XSS3+6FXK	Flush Head Machine Black Screws
⑬	XTN26+6FX	Pan Head Tapping Screws
⑭	XVE2A6FXK	Hexagon Head Black Nuts
⑮	XWC3BFX	External Toothed Lock Washer
⑯	XWC4BFX	External Toothed Lock Washer
⑰	JE-4	E-Ring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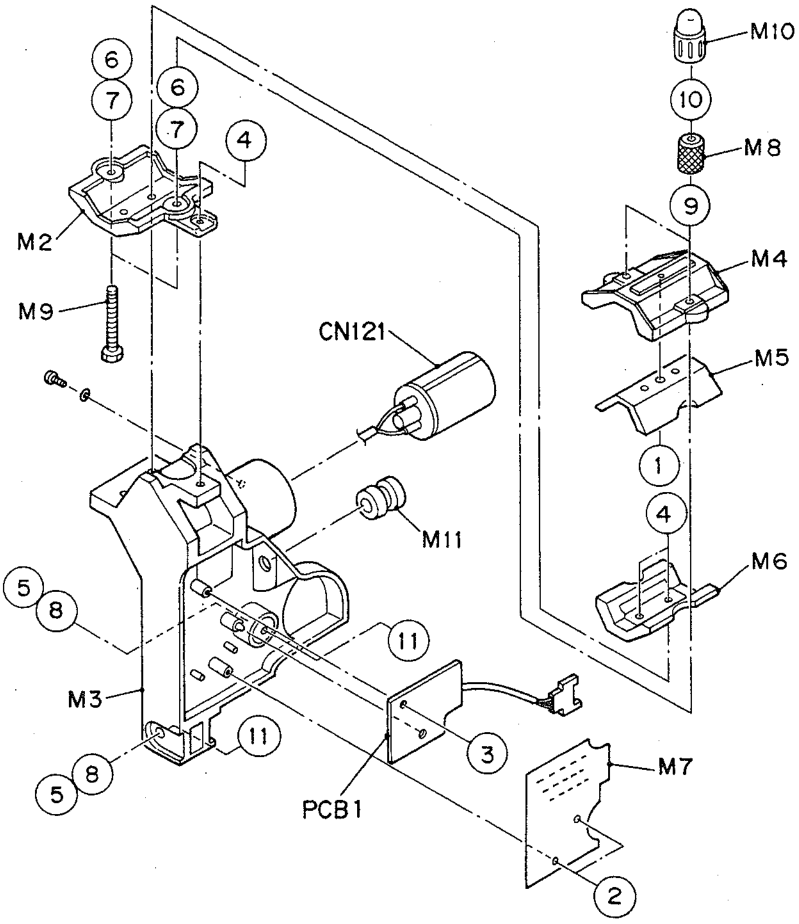
M57
M57

EXPLODED VIEW OF MICROPHONE HOLDER

○Number show screws, washers, nuts, etc.

No.	Screws	Description
①	XSB26+5FXK	Binding Head Black Screws
②	XSB2+6FXK	Binding Head Black Screws
③	XSB26+6FX	Binding Head Screws
④	XSB3+8FXK	Binding Head Black Screws
⑤	XSB4+16FXK	Binding Head Black Screws
⑥	XNG4CFXK	Hexagon Head Black Nats
⑦	XWA4BFXK	Spring Lock Black Washer
⑧	XWC4BFN	External Toothed Lock Washer
⑨	XWE4FXK	Small Round Plain Washer
⑩	E-24	E-Ring
⑪	P3	O-Ring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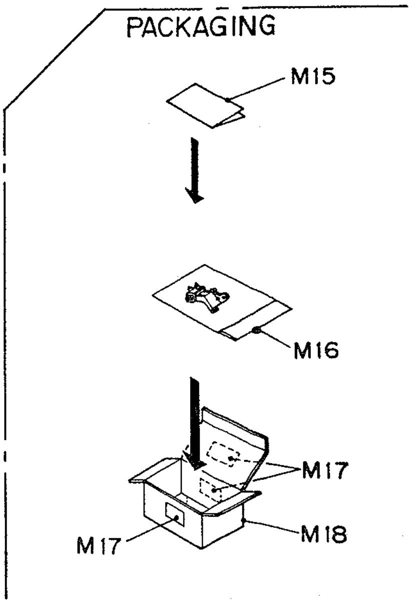
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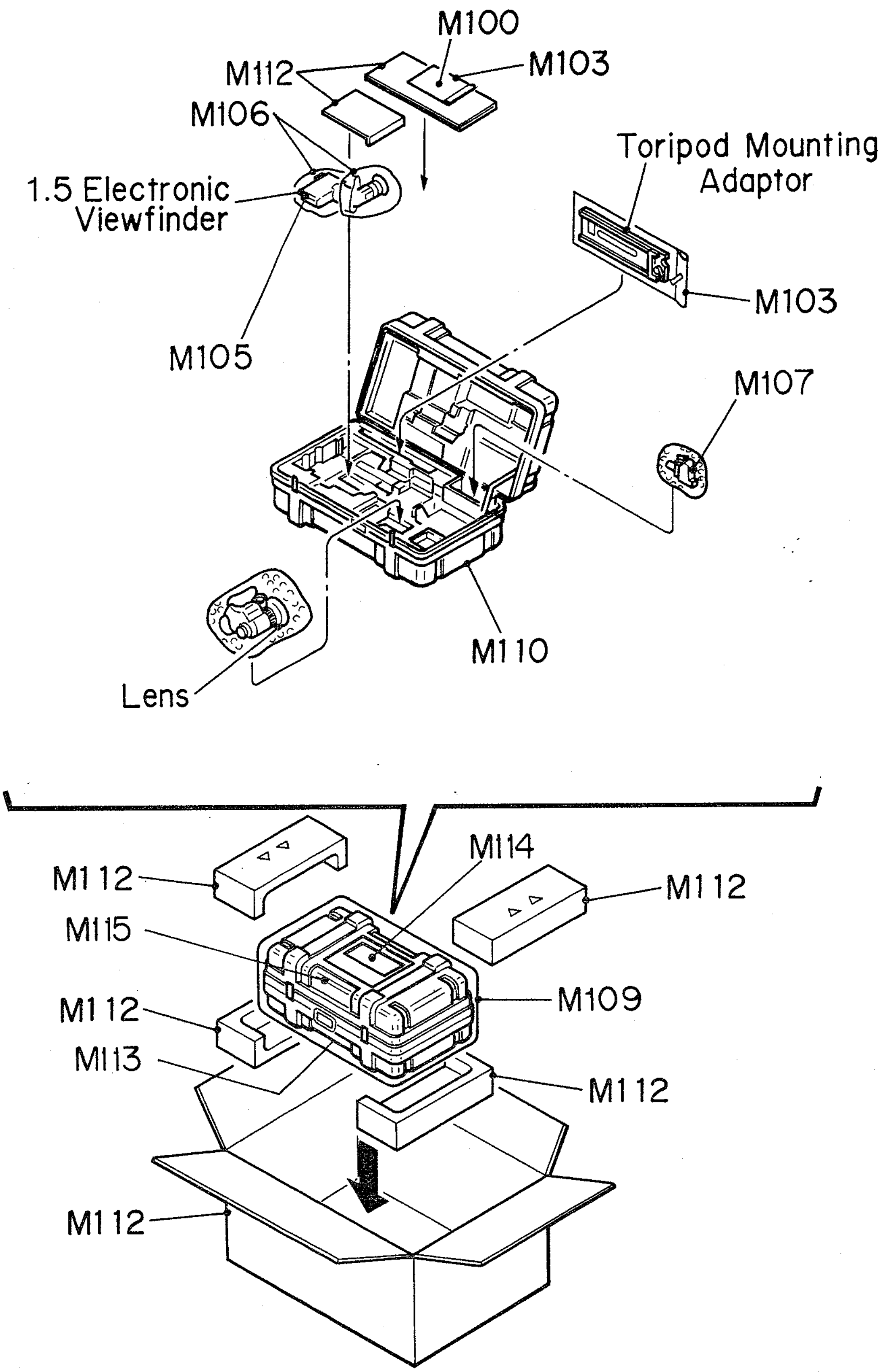
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1.5 Electronic Viewfinder
Toripod Mounting Adaptor
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M105
M107
M110
Lens
M112
M114
M112
M115
M109
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M113
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ORDER NO. AVS9309772T8

Technical Information

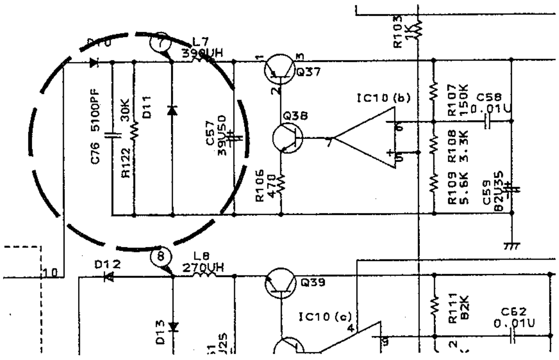
Colour Video Camera
WV-F500E Series

Subject : **Power Board Improvement**

Symptom : When use battery so that the voltage become around 10V to 10.5V, camera will turn off and on frequently.
After that, the camera goes to stand by condition and keep it.

Cause : Transistor Q36 of power board will be possible to break by over current by above condition.

Remedy : Change following parts to new values.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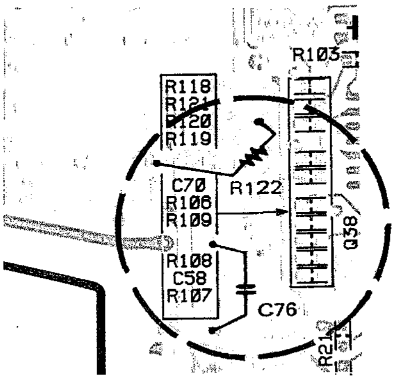
7
L7
390UH
C76 5100PF
R122 30K
D11
C57 39U50
Q37
Q38
R106 470
IC10 (b)
R103 1K
R107 150K
R108 3.3K
R109 5.6K
C58 0.01U
C59 82U35
10
D12
8
L8
270UH
D13
Q39
IC10 (c)
R111 82K
C62 0.01U


R103
R118
R121
R120
R119
C70
R106
R109
R108
C58
R107
R122
C76
Q38
R21

REPLACEMENT PARTS LIST

REF. NO.	ORIGINAL PART NO.	NEW PART NO.	DESCRIPTION
		POWER BOARD	
R27	YWR0816P363D	ERJ3GEYJ103	Carbon 36K ohms 1/16W
R28	YWR0816R623D	ERJ3GEYJ106	Carbon 1M ohms 1/16W
R122	—	ERDS2TJ303	Carbon 30K ohms 1/16W
C26	YWR2S50VR47M	YWR2S50VR10M	Electrolytic 0.1 µF 50V
C76	—	ECQP1512JZ	Plastic 5100 PF
D2	MA3062	MA3043M	Diode
D10, 11, 16, 17	YWERA81004	YWERA85009	Diode

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Printed in Japan
C-410 Ⓝ12

V00P10

ORDER NO. AVS9412934T8

Technical Information

Colour Video Camera

WV-F500E Series

Revised- 2

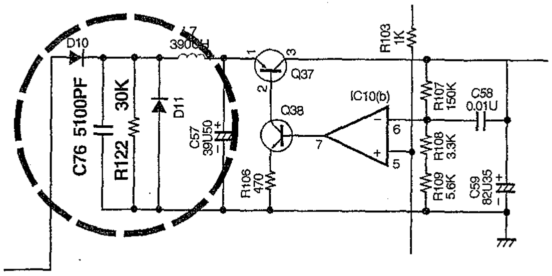
Subject : Power Board Improvement

Symptom : When useing battery so that the voltage become around 10V to 10.5V, camera may turn off and on frequently.
After that, the camera goes to stand by condition and keep it.

Cause : Transistor Q36 and Transformer T1 of Power Board may break due to over-current by above condition. (T1 primary internally shorted).

Remedy : Change following parts to new ones with defectie Q36 and T1.

Q36 : 2SB1176-PQ(Transistor)
T1 : YWMCT05000 (Low Freq Transformer)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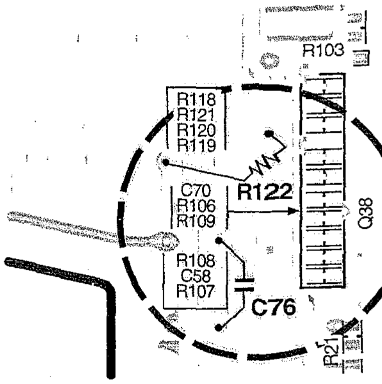
C76 5100PF
R122 30K
D11
C57
39U50
R106
470
Q37
1
2
3
Q38
IC10(b)
7
6
5
R103
1K
R107
150K
R108
3.3K
R109
5.6K
C58
0.01U
C59
82U35


R103
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R106
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Q38
R108
C58
R107
C76
R21

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⚠ **WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

REPLACEMENT PARTS LIST

REF. NO.	ORIGINAL PART NO.	NEW PART NO.	DESCRIPTION
POWER BOARD			
R27	YWR0816R363D	YWR0816R133D	Metal 13kΩ 1/16W
R122	——	ERDS2TJ303	Carbon 30kΩ 1/16W
C26	YWR2S50VR47M	YWR2S50VR10M	Electrolytic 0.1μF 50V
C76	——	ECQP1512JZ	Plastic 5100pF
D2	MA3043M	MA3062	Diode
D10, 11, 16, 17	YWERA81004	YWERA85009	Diode
R4, 8, 12	ERJ3GEYJ393	ERJ3GEYJ512	Carbon 5.1kΩ 1/16W
R39	ERJ3GEYJ104	——	Deleted

Printed in Japan
C-482 Ⓝ 12

ORDER NO. AVS9305702S8

Service Manual

Colour Video Camera

WV-F500E Series

Supplement-1

Please file and use this supplement service manual together with the service manual for the Model No. WV-F500E Series, Order No. AVS9301642C8.

LIST OF MODIFICATION

■ DIGITAL PROCESS BOARD

- CF201, CF301, CF401, CF501, and CF601 have been changed to improve the productivity, which has been applied from serial number 2ZA00001 and higher.

■ SYNC/ENCODER BOARD

- The value of C144 has been changed to improve the adjustment range of the SC-H, which has been applied from serial number 32A00001 and higher.
- C308 and two jumper wires have been added and one pattern foil of the Sync/Encoder Board has been cut to improve the confirmation of the return video signal at the Electronic Viewfinder, which has been applied from serial number 32A00001 and higher.
- Replacement parts list of the Sync/Encoder Board have been corrected.

■ PREPROCESS BOARD

- The values of R119, R319, and R519 have been changed and R120, R320, and R520 have been deleted to stabilize the Pedestal level at the low temperature, which has been applied from serial number 32A00001 and higher.
- Replacement parts list of the Preprocess Board have been corrected.

■ DRIVE BOARD

- The values of R40 and R44 have been changed to stabilized the Pedestal level at the low temperature, which has been applied from serial number 32A00001 and higher.

■ SYSTEM CONTROL BOARD

- The value of C52 has been changed to improve the adjustment range of the Character position, which has been applied from serial number 33A00001 and higher.

■ FILTER SENSOR BOARD

- The values of R1, R2, and R3 have been changed to improve the productivity, which has been applied from serial number 32A00001 and higher.

■ MISCELLANEOUS

- Cover (M69) has been added to improve the appearance when using together with the AU-45, which has been applied from serial number 35A00001 and higher.

■ VIDEO BOARD OF WV-AD500

- The pattern foil of the Video Board have been changed to improve the productivity, which has been applied from serial number 31A00001 and higher.
- The values and type of C49, C64, and C69 have been changed to stabilize the synchronization when quick changing of the camera iris from bright to dark, which has been applied from serial number 31A00001 and higher.

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CHANGE OF ADJUSTMENT

PAGE OF ORIGINAL SERVICE MANUAL	ADJUSTMENT PROCEDURE	NOTE
2-1	1. TEST EQUIPMENT REQUIRED	• Oscilloscope 100MHz → 150MHz • Prove has been added. • Window Chart has been added. • Extension Board YWV0EA0158AN has been changed to YWV0EA0258AN. • Extension Cables YWV0EA0231AN (2 pieces) and YWV0EA0232AN have been added. • Extension Cable YWV0EA0114AN has been changed to YWF250ENCH01. • Flexible Board YWV0EA0230AN has been added.
2-4	■ Extension Cable	• YWV0EA0114AN → YWF250ENCH01.
2-4	(1) SAW Adjustment	• Adjustment step has been changed from (2).
2-4	(2) PD Adjustment	• Adjustment step has been changed from (1).
2-5	(8) S-C GAIN Adjustment	• Title S-C Gain and Adjustment procedure have been changed.
2-6	(8) S-C GAIN Adjustment	• Fig. 4-2-4 has been changed.
2-6	(9) MII-Y GAIN, SYNC GAIN Adjustment	• Adjustment procedure and Fig. 4-2-5 have been changed.
2-6	(11) Colour Bar Adjustment	• Adjustment procedure have been changed. • Burst Level and SC/H Adjustments have been made in this step.
2-7	(12) Burst Level Adjustment	• This adjustment step have been deleted.
2-7	(13) SC/H Adjustment	• This adjustment step have been deleted.
2-7	(12) H. Blanking (Confirmation)	• This confirmation step has been newly added. • Fig. 4-2-11 and Fig. 4-2-12 have been added.
2-7	(13) SC Lock Adjustment	• Fig. 4-2-13 has been changed.
2-8	(18) DC Bias Adjustment	• Fig. 4-2-16 has been changed.
2-11	○ IMPORTANT NOTICE	• Adjustment notice have been changed.
2-11	(21) Pulse Cancel Coarse Adjustment	• Adjustment step has been changed from (22)
2-11	(22) Iris Set	• Adjustment step has been changed from (21) • Fig. 4-2-21 has been changed.
2-11	(24) Pedestal Coarse Adjustment	• Fig. 4-2-23 has been changed.
2-14	(29) Knee Point Adjustment	• 98IRE → 0.69V
2-14	(30) White Shading Balance Adjustment	• Adjustment procedure have been changed.
2-15	(32) Iris Gain Adjustment	• Adjustment procedure have been changed.
2-16	(36) Auto White Control Adjustment	• Adjustment procedure have been changed. • 13200°K → 3,200°K
2-16	■ Adjustment procedure of auto scan by remote control box (RCB)	• Adjustment procedure have been changed.
2-17	(38) Flare Adjustment	• Adjustment procedure have been changed.

Change of Adjustment Procedure (Underlined part is changed)

P. 2-1

ADJUSTMENT PROCEDURE

1. TEST EQUIPMENT REQUIRED

Following equipments are required for adjustment of WV-F500E series.

- Test Signal Generator (T.S.G.) or Special Effect Generator (S.E.G.) (Black Burst Output)
- Waveform Monitor
- Vectorscope
- Oscilloscope (Dual-trace, more than 150MHz bandwidth, delayed sweep)
- Prove
- Digital Voltmeter
- Frequency Counter
- Colour Video Monitor
- Window Chart
- Logarithmic Gray Scale Chart (YWV2310RB99)
- Resolution Chart (YWV1400RB99)
- In-Mega Cycle Chart (YFINMEGA-K)
- Camera Adaptor (WV-AD500)
- DC Power Supply Unit (DC 12V, 2A or more)
- Lighting (200 footcandles (2,000 lux), 3,200°K)
- Lux Meter
- Tripod
- Tripod Mounting Adaptor (WV-QT700)
- Auto Iris Servo Control Zoom Lens
- 1.5" Electronic Viewfinder (WV-VF40)
- Extension Board (YWV0EA0258AN)
- Extension Board (YWV0EA0229AN)
- Extension Cable (YWF250ENCH01)
- Flexible Board (YWV0EA0230AN)
- Extension Board (YWV0EA0231AN) (2 pieces)
- Extension Board (YWV0EA0232AN)

P. 2-4

■ Extension Cable

- When adjusting the Drive Board, use the following extension cables.
  (YWF250ENCH01)

P. 2-4

(1) SAW Adjustment

Test Point:	**TP1 (GROUND)**	**Power Board**
	TP4 (SAW)	**Power Board**
Adjust:	**VR2 (SAW LEVEL)**	**Power Board**

- Connect the oscilloscope to TP-4 (SAW) on the Power Board.
- Adjust VR2 (SAW LEVEL) so that the signal level is 0.6 ± 0.01 V as shown in the Fig. 4-2-1.

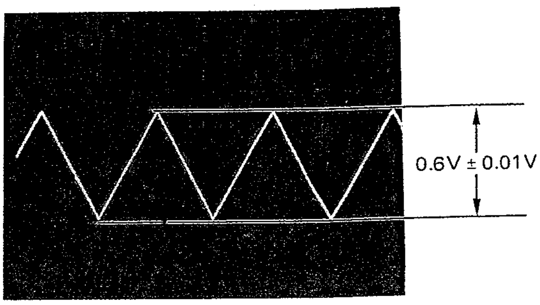


Fig. 4-2-1

(2) PD Adjustment

Test Point:	**TP1 (GROUND)**	**Power Board**
	TP3 (PD)	**Power Board**
Adjust:	**CT1 (PD ADJ)**	**Power Board**

- Connect the Digital Voltmeter to TP3 (PD) on the Power Board.
- Adjust CT1 (PD ADJ) for 3.5 ± 0.1 V.

P. 2-5

(3) Vo Adjustment

Test Point:	**TP1 (GROUND)**	**Power Board**
	TP5 (+4.95V)	**Power Board**
Adjust:	**VR1 (Vo ADJ)**	**Power Board**

- Connect the Digital Voltmeter to TP5 (Vo ADJ) on the Power Board.
- Adjust VR1 (Vo ADJ) for 4.95 ± 0.1 V.

(4) Internal Subcarrier Adjustment

Test Point:	**TP9 (SC)**	**Sync/Encoder Board**
Adjust:	**CT3 (INT)**	**Sync/Encoder Board**

- Connect the Frequency Counter to TP9 (SC) on the Sync/Encoder Board.
- Adjust CT3 (INT) for 4.43361875 MHz ± 5 Hz.

P. 2-5

(5) Interleaving Adjustment

Test Point: **TP10 (INTERLEAVING)**
Sync/Encoder Board
Adjust: **CT2 (INTERLEAVING)**
Sync/Encoder Board

- Connect the D.V.M. to TP10 (INTERLEAVING) on the Power Board.
- Adjust CT2 (INTERLEAVING) so that the DC level of TP10 is 2.5 V.

(6) R-Y/B-Y Carrier Balance Adjustment

Test Point: **Video Output Connector of Camera Adaptor**
Adjust: **VR8 (B-Y CARRIER BAL.)**
Sync/Encoder Board
VR9 (R-Y CARRIER BAL.)
Sync/Encoder Board
VR11 (B-Y WHITE BAL.)
Sync/Encoder Board
VR12 (R-Y WHITE BAL.)
Sync/Encoder Board
Observe: **Vectorscope**

- Set the Color Bar/+6dB/Camera Selection Switch on the right side of the Camera to BAR position.
- Increase the input gain of the Vectorscope.
- Adjust VR8 (B-Y CARRIER BAL), VR9 (R-Y CARRIER BAL), VR11 (B-Y WHITE BAL), and VR12 (R-Y WHITE BAL) alternately so that the center point is positioned at center of the Vectorscope as shown in the Fig. 4-2-2.

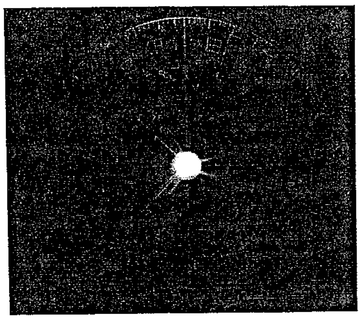


Fig. 4-2-2

(7) Y Gain and Sync Gain Adjustment

Test Point: **28 Pin** **Extension Board**
Adjust: **VR7 (Y GAIN)** **Sync/Encoder Board**
VR18 (SYNC GAIN)
Sync/Encoder Board

- Connect the oscilloscope to 28 pin on the Extension Board.
- Adjust VR7 (Y GAIN) so that the Y signal becomes 0.7 Vp-p as shown in the Fig. 4-2-3.
- Adjust VR18 (SYNC GAIN) so that the Burst signal becomes 0.3 Vp-p as shown in the Fig. 4-2-3.

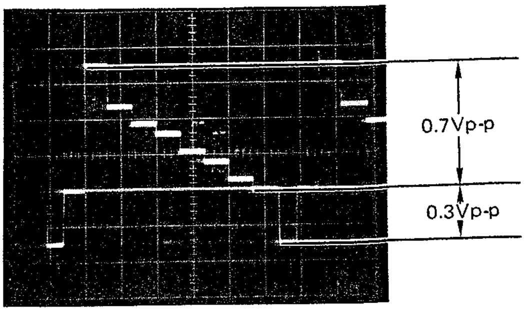


Fig. 4-2-3

(8) S-C Gain Adjustment

Test Point: **29 Pin** **Extension Board**
Adjust: **VR10 (S-C GAIN)**
Sync/Encoder Board

- Connect the oscilloscope to 29 pin on the Extension Board.
- Adjust VR10 (S-C GAIN) so that the Y signal becomes 0.3 Vp-p as shown in the Fig. 4-2-4.

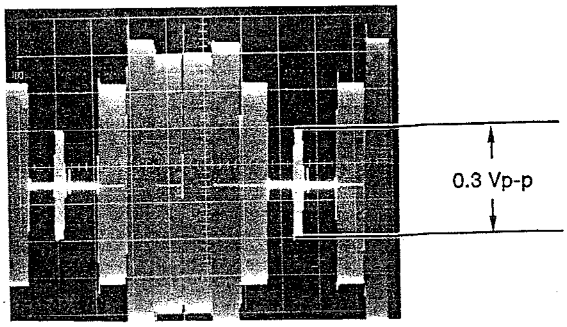


Fig. 4-2-4

P. 2-6

(9) MII-Y Gain and Sync Gain Adjustment

Test Point: **22 Pin** **Extension Board**
Adjust: **VR17 (MII-Y GAIN)**
Sync/Encoder Board
VR4 (MII-SYNC GAIN)
Sync/Encoder Board

- Connect the Oscilloscope to 22 pin on the Extension Board.
- Adjust VR17 (MII-Y GAIN) so that the Y signal becomes 0.7 Vp-p as shown in the Fig. 4-2-5.
- Adjust VR4 (MII-SYNC GAIN) so that the Sync signal becomes 0.3 Vp-p as shown in the Fig. 4-2-5.

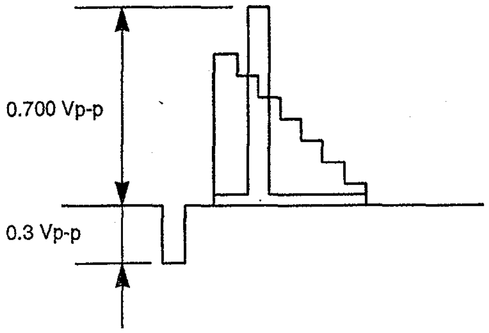


Fig. 4-2-5

(10) R-Y and B-Y Output Gain Adjustment

Test Point: **24 Pin (R-Y)** **Extension Board**
25 Pin (B-Y) **Extension Board**
Adjust: **VR16 (R-Y OUT)**
Sync/Encoder Board
VR15 (B-Y OUT)
Sync/Encoder Board

- Connect the Oscilloscope to 24 pin on the Extension Board.
- Adjust VR16 (R-Y OUT) so that the R-Y signal becomes 0.525 Vp-p as shown in the Fig. 5-2-6.

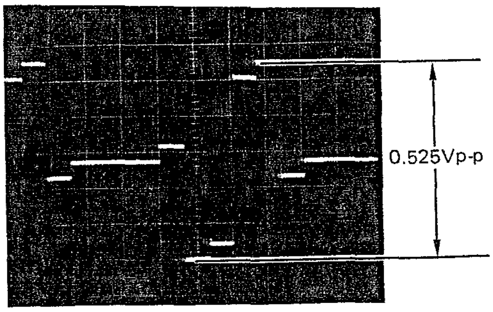


Fig. 4-2-6

- Connect the Oscilloscope to 25 pin on the Extension Board.
- Adjust VR15 (B-Y OUT) so that the B-Y signal becomes 0.525 Vp-p as shown in the Fig. 4-2-7.

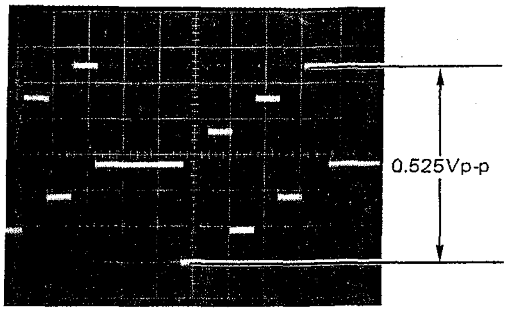


Fig. 4-2-7

(11) Colour Bar Adjustment

Adjust: **VR1 (SC-H)** **Sync/Encoder Board**
VR2 (QUAD) **Sync/Encoder Board**
VR3 (SUB QUAD)
Sync/Encoder Board
VR19 (CHROMA R-Y GAIN)
Sync/Encoder Board
VR5 (VIDEO OUTPUT GAIN)
Sync/Encoder Board
VR6 (CHROMA GAIN)
Sync/Encoder Board
VR14 (BURST PHASE)
Sync/Encoder Board
VR18 (SYNC GAIN)
Sync/Encoder Board
Observe: **Vectorscope**
Waveform Monitor

- Confirm that the Color Bar/+6 dB/Camera Selection Switch on the right side of the Camera to BAR position.
- Set the Vectorscope to VECT + SC-H mode.
- Adjust VR1 (SC-H) so that the SC/H spot on the Vectorscope is on the 180° ± 5° axis as shown in the Fig. 4-2-8.
- Adjust VR14 (BURST PHASE) so that the Burst vectors position becomes 90° ± 1° on the Vectorscope as shown in the Fig. 4-2-8.

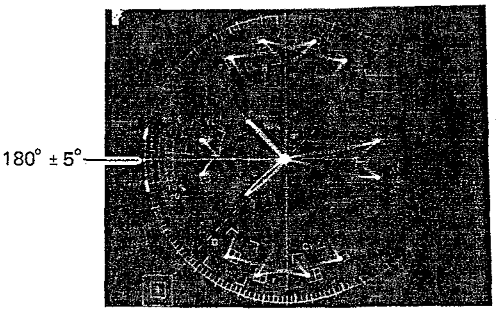


Fig. 4-2-8

P. 2-7

- Adjust VR13 (BURST GAIN) on the Sync/Encoder Board so that the Burst level becomes 0.3Vp-p as shown in the Fig. 4-2-9.
- Adjust VR18 (SYNC GAIN) on the Sync/Encoder Board so that the Sync signal becomes 0.3Vp-p as shown in the Fig. 4-2-9.
- Adjust VR5 (VIDEO OUTPUT GAIN) on the Sync/Encoder Board so that the VIDEO level becomes 0.7 Vp-p as shown in the Fig. 4-2-9.

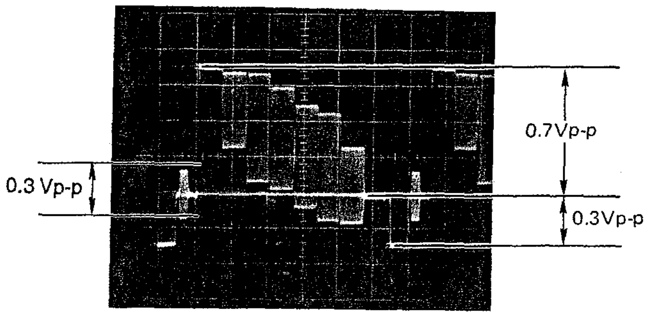


Fig. 4-2-9

- Adjust VR2 (QUAD), VR3(SUB QUAD), VR19 (CHROMA R-Y GAIN), and VR6 (CHROMA GAIN) on the Sync/Encoder Board so that all vectors fall into their respective boxes as shown in the Fig. 4-2-10.

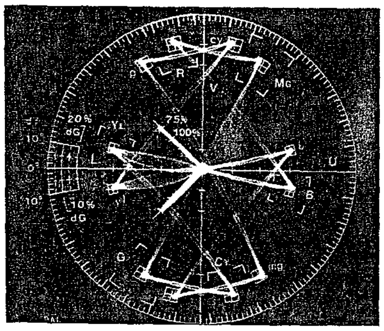
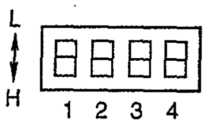


Fig. 4-2-10

(12) H. V Blanking (Confirmation)



H Blanking width : 12.0 µsec
V Blanking width : 25H

1	2	H Blanking width
L	L	11.8 µsec
H	L	11.9 µsec
H	H	12.0 µsec
L	H	12.1 µsec

3	4	V Blanking width
L	L	23H
H	L	24H
H	H	25H
L	H	26H

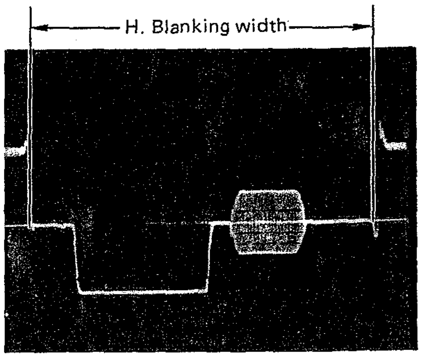


Fig. 4-2-11

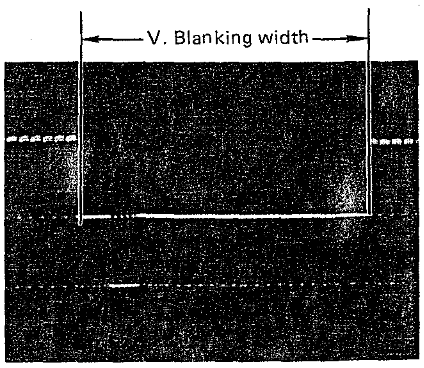


Fig. 4-2-12

(13) SC Lock Adjustment

Test Point: **TP6 (SC LOCK) Sync/Encoder Board**
Adjust: **L17 (SC LOCK-1) Sync/Encoder Board**
CT1 (SC LOCK-2) Sync/Encoder Board

- Supply the Black Burst signal or Colour Bar signal to the Gen-Lock input connector of the Camera from T.S.G. or S.E.G.
- Connect the Oscilloscope to TP6 (SC LOCK) of the Sync/Encoder Board.
- Set the Oscilloscope to DC mode.
- Adjust L17 (SC LOCK-1) so that the DC level becomes maximum.
- Adjust CT1 (SC LOCK-2) so that the DC level of TP6 is 2.3 ± 0.1 V as shown in the Fig. 4-2-13.

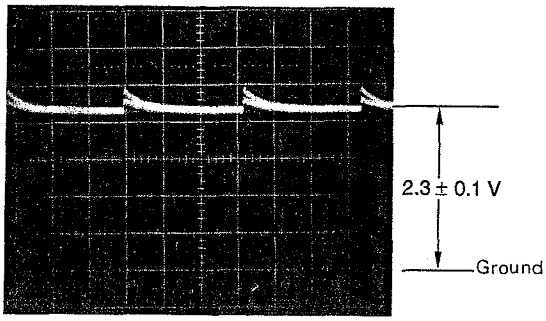


Fig. 4-2-13

P. 2-8

(14) 14MHz and 28MHz Phase Adjustment

Test Point: **TP6 (14MHz-2) Digital Process Board**
TP7 (28MHz-2) Digital Process Board
TP9 (4FSC) Digital Process Board
TP10 (8FSC) Digital Process Board
Adjust: **CT1 (14MHz PHASE-1) Digital Process Board**
CT2 (14MHz PHASE-2) Digital Process Board
CT3 (28MHz PHASE) Digital Process Board

- Connect the the Oscilloscope CH1 to TP10 (8FSC) and CH2 to TP9 (4FSC).
- Adjust CT1 (14MHz PHASE-1) so that the rise edge phase of 4FSC clock pulse at TP9 from rise edge of 8FSC clock pulse at TP10 becomes 5 nsec ± 1 nsec delay as shown in the Fig. 4-2-14.
- Connect the Oscilloscope CH1 to TP7 (28MHz-2).
- Adjust CT3 (28MHz PHASE) so that the rise edge phase of 28MHz clock pulse at TP7 from rise edge of 4FSC clock pulse at TP9 becomes 3 nsec ± 1 nsec delay as shown in the Fig. 4-2-14.
- Connect the Oscilloscope CH2 to TP6 (14MHz-2).
- Adjust CT2 (14MHz PHASE-2) so that the rise edge phase of 14MHz clock pulse at TP6 from rise edge of 28MHz clock pulse at TP7 becomes 5 nsec ± 1 nsec delay as shown in the Fig. 4-2-14.

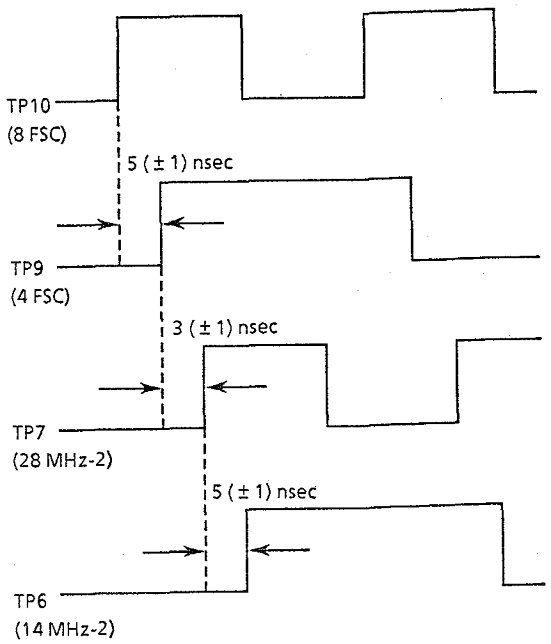


Fig. 4-2-14

(15) Corner Gate Pulse Adjustment

Test Point: **TP4 (VD) Mother Board**
TP13 (CORNER GATE PULSE) Digital Process Board
Adjust: **VR3 (CORNER GATE PULSE-1) Digital Process Board**
VR4 (CORNER GATE PULSE-2) Digital Process Board

- Connect CH1 of the Oscilloscope to TP4 (VD) on the Mother Board.
- Connect CH2 of the Oscilloscope to TP13 (CORNER GATE PULSE) on the Digital Process Board.
- Adjust VR3 (CORNER GATE PULSE-1) so that the falling edge phase of the Corner Gate Pulse from the rise edge of VD pulse at TP4 on the Mother Board becomes 6msec delay as shown in the Fig. 4-2-15.

- Adjust VR4 (CORNER GATE PULSE-2) so that the width of the Corner Gate Pulse becomes 6 msec as shown in the Fig. 4-2-15.

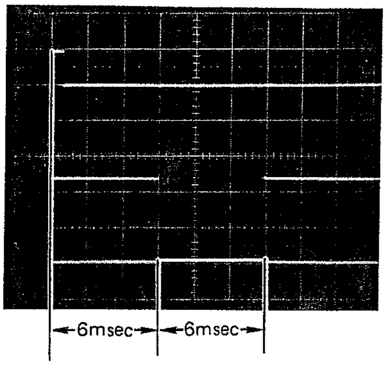


Fig. 4-2-15

(16) Vsub Adjustment

Test Point:	**TP4 (R Vsub)**	**Drive Board**
	TP5 (G Vsub)	**Drive Board**
	TP6 (B Vsub)	**Drive Board**
Adjust:	**VR4 (R Vsub)**	**Drive Board**
	VR5 (G Vsub)	**Drive Board**
	VR6 (B Vsub)	**Drive Board**

- Set the Colour Bar/+6dB/Camera Selection Switch of the Camera to the Camera position.
- Confirm the Electronic Shutter ON/OFF Switch is OFF position.
- Connect the Digital Voltmeter to TP5 (G Vsub) on the Drive Board.
- Adjust the VR5 (G Vsub) so that the voltage at TP5 (G Vsub) is equal to the voltage that indicated by label on the Flexible Board between the Drive Board and Head Optical Assembly.
- Connect the Digital Voltmeter to TP4 (R Vsub) on the Drive Board.
- Adjust the VR4 (R Vsub) so that the voltage at TP4 (R Vsub) is equal to the voltage that indicated by label on the Flexible Board between the Drive Board and Head Optical Assembly.
- Connect the Digital Voltmeter to TP6 (B Vsub) on the Drive Board.
- Adjust the VR6 (B Vsub) so that the voltage at TP6 (B Vsub) is equal to the voltage that indicated by label on the Flexible Board between the Drive Board and Head Optical Assembly.

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(17) VREG Adjustment

Test Point:	**TP101 (R IN)**	**Preamp Board**
	TP201 (G IN)	**Preamp Board**
	TP301 (B IN)	**Preamp Board**
Adjust:	**VR1 (R VXRG)**	**Drive Board**
	VR2 (G VXRG)	**Drive Board**
	VR3 (B VXRG)	**Drive Board**

- Connect the Drive Board and Preamp Board using with the Extension Cable.
- Aim the Camera at the Logarithmic Gray Scale Chart.
- Set the lens iris and lighting so that saturation the CCD Image Sensor output.
- Connect the Oscilloscope TP201 (G IN) on the Preamp Board.
- Adjust VR2 (G VXRG) so that output of the CCD Image Sensor becomes maximum.
- Connect the Oscilloscope TP101 (R IN) on the Preamp Board.
- Adjust VR1 (R VXRG) so that output of the CCD Image Sensor becomes maximum.
- Connect the Oscilloscope TP301 (B IN) on the Preamp Board.
- Adjust VR3 (B VXRG) so that output of the CCD Image Sensor becomes maximum.

(18) DC Bias Adjustment

Test Point:	**TP102 (R OUT)**	**Preamp Board**
	TP202 (G OUT)	**Preamp Board**
	TP302 (B OUT)	**Preamp Board**
Adjust:	**VR101 (R DC BIAS)**	**Preamp Board**
	VR201 (G DC BIAS)	**Preamp Board**
	VR301 (B DC BIAS)	**Preamp Board**

- Close the lens iris.
- Set the Oscilloscope to H rate and DC mode.
- Turn VR102 (R WHITE CLIP), VR202 (G WHITE CLIP), and VR302 (B WHITE CLIP) on the Preamp Board to fully clockwise.
- Connect the Oscilloscope to TP202 (G OUT) on the Preamp Board.
- Adjust VR201 (G DC BIAS) so that the DC level from Ground level becomes 0.5 V as shown in the Fig. 4-2-16.
- Connect the Oscilloscope to TP102 (R OUT) on the Preamp Board.

- Adjust VR101 (R DC BIAS) so that the DC level from Ground level becomes 0.5 V as shown in the Fig. 4-2-16.
- Connect the Oscilloscope to TP302 (B OUT) on the Preamp Board.
- Adjust VR301 (B DC BIAS) so that the DC level from Ground level becomes 0.5 V as shown in the Fig. 4-2-16.

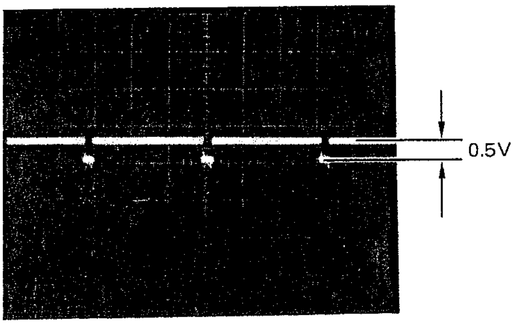


Fig. 4-2-16

(19) White Clip Adjustment

Test Point:	**TP102 (R OUT)**	**Preamp Board**
	TP202 (G OUT)	**Preamp Board**
	TP302 (B OUT)	**Preamp Board**
Adjust:	**VR102 (R WHITE CLIP)**	**Preamp Board**
	VR202 (G WHITE CLIP)	**Preamp Board**
	VR302 (B WHITE CLIP)	**Preamp Board**

- Aim the Camera at Logarithmic Gray Scale Chart (lighting is 2,000 lux, 3,200°K).
- Connect the Oscilloscope CH1 to TP202 (G OUT) and CH2 to TP102 (R OUT).
- Open the lens iris to saturating the signal at TP202.
- Adjust vertical level of CH2 on the Oscilloscope so that the cross point of the G signal at TP202 becomes same level at that cross point of the R signal at TP102 as shown in the Fig. 4-2-17.
- Adjust the VR102 (R WHITE CLIP) so that the clip level of TP102 and saturation level of TP202 (G OUT) becomes coincide as shown in the Fig. 4-2-18.
- Connect CH2 of Oscilloscope to TP302 (B OUT).
- Open the lens iris to saturating the signal at TP202.
- Adjust vertical level of CH2 on the Oscilloscope so that the cross point of the G signal at TP202 becomes same level at that cross point of the B signal at TP302 as shown in the Fig. 4-2-17.
- Adjust the VR102 (R WHITE CLIP) so that the clip level of TP102 and saturation level of TP202 (G OUT) becomes coincide as shown in the Fig. 4-2-18.

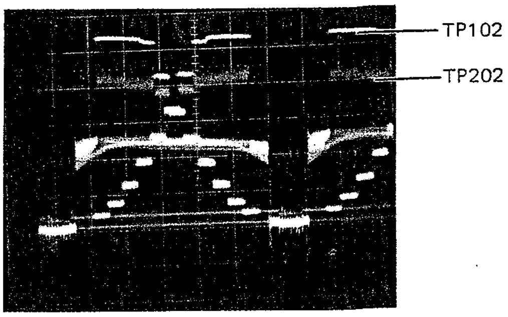


Fig. 4-2-17

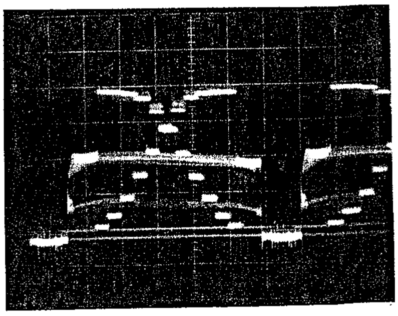


Fig. 4-2-18

P. 2-10

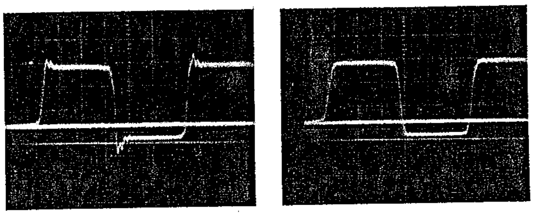
(20) Preamp Frequency Response Adjustment

Test Point:	**TP102 (R OUT)**	**Preamp Board**
	TP202 (G OUT)	**Preamp Board**
	TP302 (B OUT)	**Preamp Board**
Adjust:	**CT101 (R FREQ)**	**Preamp Board**
	CT201 (G FREQ)	**Preamp Board**
	CT301 (B FREQ)	**Preamp Board**

- Aim the Camera at In-Mega Cycle Chart.
- Connect the Oscilloscope to TP202 (G OUT) on the Preamp Board.
- Expand the 0.5 MHz waveform of the In-Mega Cycle Chart using delayed sweep mode of the Oscilloscope.
- Adjust CT201 (G FREQ) so that the decay edge and rise edge of the 0.5 MHz signal becomes right

angle (no curl and no overshoot) as shown in the Fig. 4-2-19.

- Connect the Oscilloscope to TP102 (R OUT) on the Preamp Board.
- Expand the 0.5 MHz waveform of the In-Mega Cycle Chart using delayed sweep mode of the Oscilloscope.
- Adjust CT101 (R FREQ) so that the decay edge and rise edge of the 0.5 MHz signal becomes right angle (no curl and no overshoot) as shown in the Fig. 4-2-19.
- Connect the Oscilloscope to TP302 (B OUT) on the Preamp Board.
- Expand the 0.5 MHz waveform of the In-Mega Cycle Chart using delayed sweep mode of the Oscilloscope.
- Adjust CT301 (B FREQ) so that the decay edge and rise edge of the 0.5 MHz signal becomes right angle (no curl and no overshoot) as shown in the Fig. 4-2-19.



NO GOOD GOOD

Fig. 4-2-19

Prior to adjustment the Preprocess Board, switches and controls should be set as follows unless instructed otherwise.

Position of the Controls and Switches:

(Front)

Lens Iris Control	NOR

(Right Side)

High Gain Selection Switch	0 dB
White Balance Selection Switch	MANUAL
Colour Bar/+6dB/Camera Selection Switch	CAMERA
Filter Selection Wheel	1 (3,200°K)

(Mother Board)

Electronic Shutter On/Off Switch (SW11)	OFF
Scene File Selection Switch (SW10)	1
Level and Zone Indicator Switch (SW9)	OFF
User Set Switch (SW2)	OFF
Detail Frequency Band Selection Switch (SW3)	OFF
Detail Level Selection Switch (SW4)	OFF
Lens Iris Control (VR4)	Mechanical Center
Total Pedestal Level Control (VR3)	Mechanical Center

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O IMPORTANT NOTICE

Preset the memory in the System Control Board Procedure indicator below and do not set the Auto White and Auto Black Balance set switch (AWC, ABC) on the front panel throughout the adjustment.

- Disconnect the lens connector.
- Set the User Set Switch to 1 or 2 position.
- Confirm the selected NO.1 INITIAL SET.
- Set the arrow to "KNEE" by the Item Switch SW7 on the Mother Board.
- Set the "KNEE" to OFF by the Down Switch SW5 on the Mother Board.
- Set the arrow to "WHITE CLIP" by the Item Switch SW7.
- Set the "WHITE CLIP" to OFF by the Down Switch SW5.
- Set the User Set Switch to OFF position.
- Short TP1 (RESET-1) and TP2 (GROUND) on the System Control Board for approximately one second.
- Short TP3 (RESET-2) and TP4 (GROUND) on the System Control Board for approximately one second.

(21) Pulse Cancel Adjustment

Test Point: **TP102 (R PREVIDEO)** **Preprocess Board**
TP302 (G PREVIDEO) **Preprocess Board**
TP502 (B PREVIDEO) **Preprocess Board**
Adjust: **VR109 (R PULSE CANCEL)** **Preprocess Board**
VR309 (G PULSE CANCEL) **Preprocess Board**
VR509 (B PULSE CANCEL) **Preprocess Board**

- Cap on the lens.
- Connect the Oscilloscope to TP302 (G PREVIDEO) on the Preprocess Board.
- Adjust VR309 (G PULSE CANCEL) so that center of the signal level becomes 0 mV as shown in the Fig. 4-2-20.
- Connect the Oscilloscope to TP102 (R PREVIDEO) on the Preprocess Board.
- Adjust VR109 (R PULSE CANCEL) so that center of the signal level becomes 0 mV as shown in the Fig. 4-2-20.
- Connect the Oscilloscope to TP502 (B PREVIDEO) on the Preprocess Board.
- Adjust VR509 (B PULSE CANCEL) so that center of the signal level becomes 0 mV as shown in the Fig. 4-2-20.

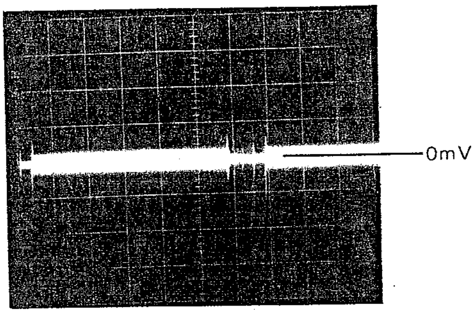

Fig. 4-2-20

(22) Iris Adjustment

Test Point: **TP201 (G IN)** **Preamp Board**
Adjust: **Lens Iris** **Camera**

- Aim the Camera at Logarithmic Gray Scale Chart (lighting is 2,000 lux, 3,200°K).
- Connect the Oscilloscope to TP201 on the Preamp Board.
- Set the 20MHz Filter of the Oscilloscope to ON position.
- Adjust Lens Iris (MAN) so that the signal level becomes 200 mVp-p as shown in the Fig. 4-2-21.

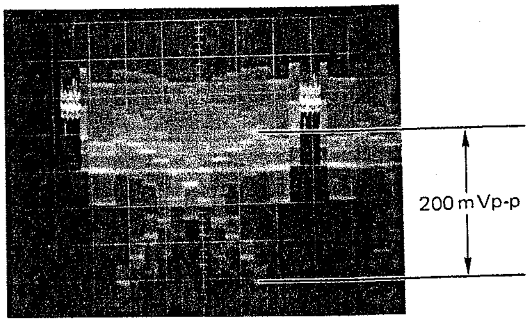

Fig. 4-2-21

(23) Input Gain Adjustment

Test Point: **TP102 (R PREVIDEO)** **Preprocess Board**
TP302 (G PREVIDEO) **Preprocess Board**
TP502 (B PREVIDEO) **Preprocess Board**
Adjust: **VR101 (R INPUT GAIN)** **Preprocess Board**
VR301 (G INPUT GAIN) **Preprocess Board**
VR501 (B INPUT GAIN) **Preprocess Board**

- Aim the Camera at Logarithmic Gray Scale Chart (lighting is 2,000 lux, 3,200°K).
- Connect the Oscilloscope to TP302 (G PREVIDEO) on the Preprocess Board.
- Adjust VR301 (G INPUT GAIN) so that the G signal level becomes 0.7 Vp-p as shown in the Fig. 4-2-22.
- Connect the Oscilloscope to TP102 (R PREVIDEO) on the Preprocess Board.
- Adjust VR101 (R INPUT GAIN) so that the R signal level becomes 0.7 Vp-p as shown in the Fig. 4-2-22.
- Connect the Oscilloscope to TP502 (B PREVIDEO)

on the Preprocess Board.

- Adjust VR501 (B INPUT GAIN) so that the B signal level becomes 0.7 Vp-p as shown in the Fig. 4-2-22.

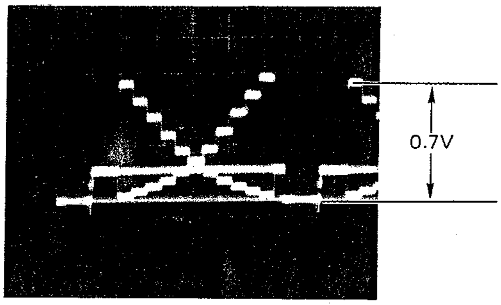

Fig. 4-2-22

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(24) Pedestal Coarse Adjustment

Test Point:	**TP104 (R GAIN)**	**Preprocess Board**
	TP304 (G GAIN)	**Preprocess Board**
	TP504 (B GAIN)	**Preprocess Board**
Adjust:	**VR108 (R PEDESTAL)**	**Preprocess Board**
	VR308 (G PEDESTAL)	**Preprocess Board**
	VR508 (B PEDESTAL)	**Preprocess Board**

- Cap on the lens.
- Connect the Oscilloscope to TP304 (G GAIN) on the Preprocess Board.
- Adjust VR308 (G PEDESTAL) so that the Pedestal level becomes 10 ± 5 mV as shown in the Fig. 4-2-23.
- Connect the Oscilloscope to TP104 (R GAIN) on the Preprocess Board.
- Adjust VR108 (R PEDESTAL) so that the Pedestal level becomes 10 ± 5 mV as shown in the Fig. 4-2-23.
- Connect the Oscilloscope to TP504 (B GAIN) on the Preprocess Board.
- Adjust VR508 (B PEDESTAL) so that the Pedestal level becomes 10 ± 5 mV as shown in the Fig. 4-2-23.

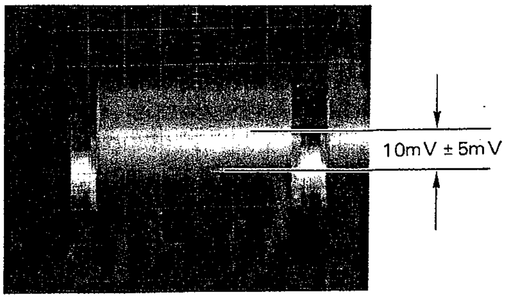


Fig. 4-2-23

(25) Gain Adjustment

Test Point:	**TP104 (R GAIN)**	**Preprocess Board**
	TP304 (G GAIN)	**Preprocess Board**
	TP504 (B GAIN)	**Preprocess Board**
Adjust:	**VR104 (R GAIN)**	**Preprocess Board**
	VR304 (G GAIN)	**Preprocess Board**
	VR504 (B GAIN)	**Preprocess Board**

- Aim the Camera at Logarithmic Gray Scale Chart (lighting is 2,000 lux, 3,200°K).
- Connect the Oscilloscope to TP304 (G GAIN) on the Preprocess Board.
- Adjust VR304 (G GAIN) so that the G signal level becomes 0.7 Vp-p as shown in the Fig. 4-2-24.
- Connect the Oscilloscope to TP104 (R GAIN) on the Preprocess Board.
- Adjust VR104 (R GAIN) so that the R signal level becomes 0.7 Vp-p as shown in the Fig. 4-2-24.
- Connect the Oscilloscope to TP504 (B GAIN) on the Preprocess Board.
- Adjust VR504 (B GAIN) so that the B signal level becomes 0.7 Vp-p as shown in the Fig. 4-2-24.

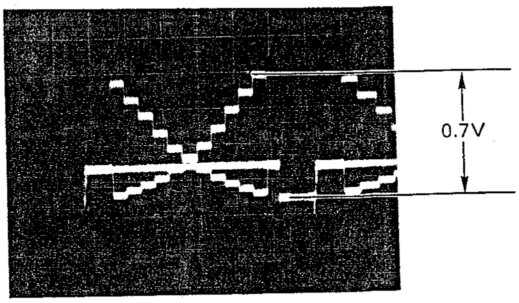


Fig. 4-2-24

(26) Gamma Balance Adjustment

Test Point: **TP105 (R GAMMA) Preprocess Board**
TP305 (G GAMMA) Preprocess Board
TP505 (B GAMMA) Preprocess Board

Adjust: **VR105 (R GAMMA BAL) Preprocess Board**
VR305 (G GAMMA BAL) Preprocess Board
VR505 (B GAMMA BAL) Preprocess Board

- Aim the Camera at Logarithmic Gray Scale Chart (lighting is 2,000 lux, 3,200°K).
- Connect the Oscilloscope to TP305 (G GAMMA) on the Preprocess Board.
- Adjust VR305 (G GAMMA BAL) so that the signal level becomes 0.7 Vp-p as shown in the Fig. 4-2-25.
- Connect the Oscilloscope to TP105 (R GAMMA) on the Preprocess Board.
- Adjust VR105 (R GAMMA BAL) so that the signal level becomes 0.7 Vp-p as shown in the Fig. 4-2-25.
- Connect the Oscilloscope to TP505 (B GAMMA) on the Preprocess Board.
- Adjust VR505 (B GAMMA BAL) so that the signal level becomes 0.7 Vp-p as shown in the Fig. 4-2-25.

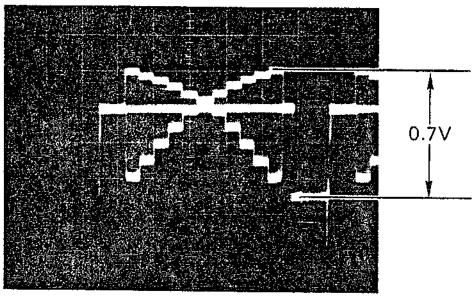


Fig. 4-2-25

P. 2-13

(27) Preprocess Output Adjustment

Adjust: **VR106 (R GAMMA) Preprocess Board**
VR306 (G GAMMA) Preprocess Board
VR506 (B GAMMA) Preprocess Board
VR107 (R PEDESTAL) Preprocess Board
VR307 (G PEDESTAL) Preprocess Board
VR507 (B OUTPUT GAIN) Preprocess Board
VR108 (R PEDESTAL) Preprocess Board
VR308 (G PEDESTAL) Preprocess Board
VR508 (B PEDESTAL) Preprocess Board
VR109 (R PULSE CANCEL) Preprocess Board
VR309 (G PULSE CANCEL) Preprocess Board
VR509 (B PULSE CANCEL) Preprocess Board

Observe: **Waveform Monitor**

- Aim the Camera at Logarithmic Gray Scale Chart (lighting is 2,000 lux, 3,200°K).
- Adjust VR306 (G GAMMA), VR106 (R GAMMA), and VR506 (B GAMMA) so that the Gamma cross point level becomes 0.4 V as shown in the Fig. 4-2-26.
- Adjust VR307 (G OUTPUT LEVEL), VR107 (R OUTPUT LEVEL), and VR507 (B OUTPUT LEVEL) so that the Video signal level becomes 0.7V as shown in the Fig. 4-2-26.

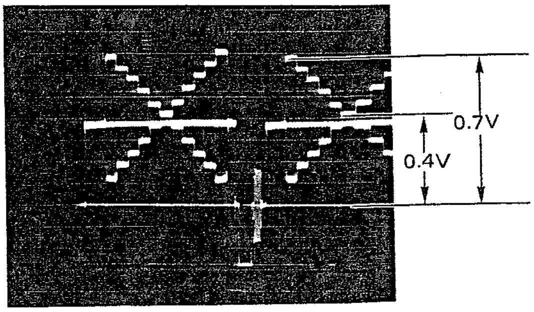


Fig. 4-2-26

- Cap on the lens.
- Adjust VR308 (G PEDESTAL), VR108 (R PEDESTAL), and VR508 (B PEDESTAL) so that the Pedestal level becomes 0.035V as shown in the Fig. 4-2-27.
- Set the High Gain Selection Switch to + 18 dB position.
- Adjust VR309 (G PULSE CANCEL), VR109 (R PULSE CANCEL), and VR509 (B PULSE CANCEL) so that the Pedestal level becomes 0.035 V as shown in the Fig. 4-2-27.

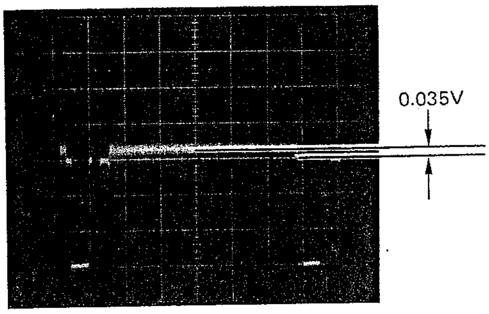


Fig. 4-2-27

(28) Shutter Pulse Cancel Adjustment

Test Point: **Video Output Connector**

Adjust: **VR110 (R SHUTTER CANCEL PULSE)** **Preprocess Board**

VR310 (G SHUTTER CANCEL PULSE) **Preprocess Board**

VR510 (B SHUTTER CANCEL PULSE) **Preprocess Board**

- Cap on the lens.
- Set the Electronic Shutter On/Off Switch to ON position.
- Set the Electronic Shutter Speed Selection Switch to 1/500 position.
- Set the High Gain Selection Switch to + 18 dB position.
- Adjust VR310 (G SHUTTER PULSE CANCEL), VR110 (R SHUTTER PULSE CANCEL), and VR510 (B SHUTTER PULSE CANCEL) alternately so that center point is positioned at center of the Vectorscope as shown in the Fig. 4-2-28.

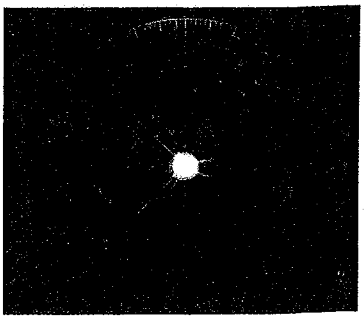


Fig. 4-2-28

- Reset the High Gain Selection Switch to 0 dB and the Electronic Shutter On/Off Switch to OFF position.

P. 2-14

(29) Knee Point Adjustment

Test Point: **TP106 (R OUTPUT)** **Preprocess Board**

TP306 (G OUTPUT) **Preprocess Board**

TP506 (B OUTPUT) **Preprocess Board**

Adjust: **VR111 (R KNEE POINT)** **Preprocess Board**

VR311 (G KNEE POINT) **Preprocess Board**

VR511 (B KNEE POINT) **Preprocess Board**

- Aim the Camera at Logarithmic Gray Scale Chart (lighting is 2,000 lux, 3,200°K).
- Set the Scene File Selection Switch to 1 position.
- Set the User Set Switch to 1 or 2.
- Set the cursor to "KNEE" line by the Item Switch.
- Set the mode to "MAN" by the Down Switch.
- Set the cursor to WHITE CLIP to "ON" by the Down Switch.
- Set the User Set Switch to OFF.
- Connect the Oscilloscope to TP306 (G OUT) on the Preprocess Board.
- Open the lens iris so that the Knee level at TP306 (G OUT) becomes 0.67 V.
- Adjust VR311 (G KNEE POINT) so that the starting point of the Knee level becomes 0.69V as shown in the Fig. 4-2-29.

- Connect the Oscilloscope to TP106 (R OUT) on the Preprocess Board.
- Adjust VR111 (R KNEE POINT) so that the starting point of the Knee level becomes 0.69 V as shown in the Fig. 4-2-29.
- Connect the Oscilloscope to TP506 (B OUT) on the Preprocess Board.
- Adjust VR511 (B KNEE POINT) so that the starting point of the Knee level becomes 0.69 V as shown in the Fig. 4-2-29.

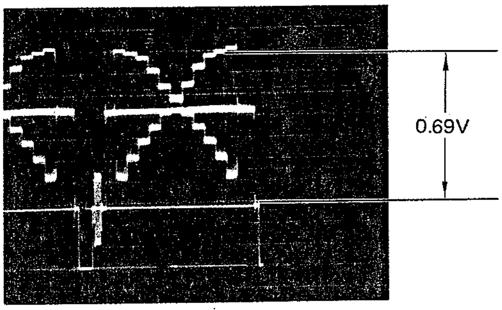


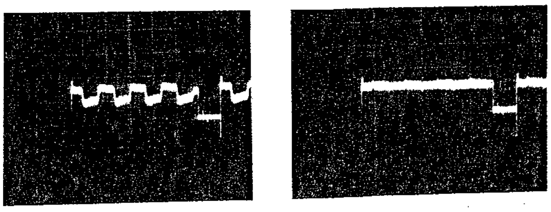
Fig. 4-2-29

(30) White Shading Balance Adjustment

Test Point: TP106 (R OUTPUT) Preprocess Board
TP306 (G OUTPUT) Preprocess Board
TP506 (B OUTPUT) Preprocess Board

Adjust: VR112 (R W. SHD) Preprocess Board
VR312 (G W. SHD) Preprocess Board
VR512 (B W. SHD) Preprocess Board

- Cap on the lens.
- Set the Scene File Selection Switch to 1 position. Set the User Set Switch to 1 or 2.
- Select the Page Switch to No. 3.
- Select the Item Switch to WHITE SHD and Up Switch to ON.
- Change the data "WHITE SHD" to "TEST" by executing AWC while pressing the Data Input Switch SW1 on the System Control Board.
- Connect the Oscilloscope to TP306 (G OUT) on the Process Board.
- Adjust VR312 (G W. SHD) so that the signal level becomes minimum as shown in the Fig. 4-2-30.
- Connect the Oscilloscope to TP106 (R OUT) on the Process Board.
- Adjust VR112 (R W. SHD) so that the signal level becomes minimum as shown in the Fig. 4-2-30.
- Connect the Oscilloscope to TP506 (B OUT) on the Process Board.
- Adjust VR512 (B W. SHD) so that the signal level becomes minimum as shown in the Fig. 4-2-30.
- Set the Data Input Switch SW1 on the System Control Board to OFF position.
- Set the User Set Switch to OFF position.



NO GOOD GOOD

Fig. 4-2-30

(31) Frequency Response Adjustment

Test Point: TP104 (R GAIN) Preprocess Board
TP304 (G GAIN) Preprocess Board
TP504 (B GAIN) Preprocess Board

Adjust: CT101 (R FREQ RESPONSE) Preprocess Board
CT301 (G FREQ RESPONSE) Preprocess Board
CT501 (B FREQ RESPONSE) Preprocess Board

- Set the Filter Wheel to 1 (3,200°K) position.
- Aim the Camera at the In-Mega Cycle Chart.
- Set the Oscilloscope at H rate.
- Connect the Oscilloscope to TP104 (R GAIN).
- Adjust CT101 (R FREQ RESPONSE) so that the waveform from 0.5 MHz to 6 MHz becomes flat as much as possible as shown in the Fig. 4-2-31.
- Connect the Oscilloscope to TP304 (G GAIN).
- Adjust CT301 (G FREQ RESPONSE) so that the waveform from 0.5 MHz to 6 MHz becomes flat as much as possible as shown in the Fig. 4-2-31.
- Connect the Oscilloscope to TP504 (B GAIN).
- Adjust CT501 (B FREQ RESPONSE) so that the waveform from 0.5 MHz to 6 MHz becomes flat as much as possible as shown in the Fig. 4-2-31.

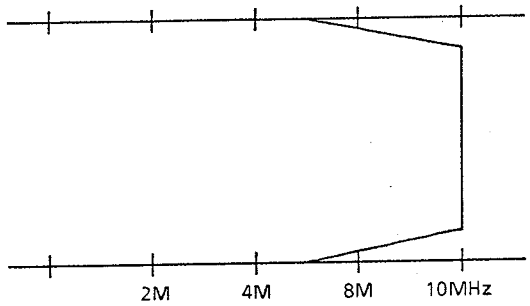


Fig. 4-2-31

P. 2-15

(32) Iris Gain Adjustment

Test Point: **VIDEO OUTPUT Connector**
Adjust: **VR1 (IRIS GAIN) Preprocess Board**
VR2 (ANTI CLOSE) Preprocess Board
VR4 (IRIS LEVEL) Mother Board
Observe: **Video Monitor**

Position of the Controls and Switches:

(Front)

- Filter Selection Wheel .... "1"

(Right Side) Viewed from front

- High Gain Selection Switch .... "0 dB"
- Electronic Shutter On/Off Switch ...... "OFF"
- User Set Switch .... "1 or 2"

(Lens)

- Iris Control Selection Switch .... "Auto"

- Connect the Lens Connector to left side of Camera.
- Aim the Camera at the Logarithmic Gray Scale Chart (lighting is 2,000 lux, (3,200°K).
- Observe the Viewfinder and select the No. 2 INITIAL SET by the Page Switch.
- Set the "IRIS P/A" to "PEAK" and "IRIS GATE" to "1/3 CUT".
- Set the User Set Switch to OFF.
- Set VR1 (IRIS GAIN) on the Preprocess Board to fully clockwise.
- Adjust VR4 (IRIS LEVEL) on the Mother Board so that the monitor output signal level becomes 0.7V.
- Repeat adjusting VR1 on the Preprocess board and VR4 on the Mother Board so that waveform level becomes 0.7V and there is no hunting.
- Adjust VR2 (ANTI CLOSE) does not hunt when change the gain to + 24 dB.
- Confirm that the lens iris opens by 1/2 F step when the Lens Iris Selection Switch is set to 1/2 open position.
- Confirm that the lens closes by 1/2 F step when the Lens Iris Selection Switch is set to 1/2 close position.

(33) Auto BLK SHD Adjustment

- Cap on the lens.
- Set the Scene File Selection Switch to 1 and User Set Switch to 1 or 2.
- Observe the Viewfinder and select the No. 3 INITIAL SET by the Page Switch.
- Confirm the "BLACK SHD" Line is selected.
- Executed the ABC while pressing the Auto White and Auto Black Balance Set Switch and confirm the data is changing to ACTIVE, blinking Auto Warning Indicator (Green) on the Viewfinder screen.
- Confirm completion of ABC set and data of BLACK SHD is changing to ON.
- Set the User Set Switch to OFF position.

(34) Battery Warning Adjustment

Test Point: **10-12 pin (+12V IN) Power Board**
31-33 Pin (GROUND) Power Board
Adjust: **VR5 (BATTERY WARNING LEVEL) Mother Board**
Observe: **1.5" Electronic Viewfinder**

- Connect the (+) of the Digital Voltmeter to Pin 10–12 (+12V IN) and (–) of the Digital Voltmeter to Pin 31–33 on the Power Board.
- Adjust DC Power Supply Unit so that the DC voltage at pin 10–12 become + 10.6V.
- Turn VR5 (BATTERY WARNING LEVEL) fully clockwise and turn it back slowly and stop it when the indicator starts blinking of the Battery Warning Indicator in the Electronic Viewfinder.

(35) Auto Black Control Adjustment

Adjust: **SW1 (DATA INPUT SWITCH) System Control Board**
SW8 (PAGE SWITCH) Mother Board
SW6 (UP SWITCH) Mother Board
SW5 (DOWN SWITCH) Mother Board
Observe: **Vectorscope**
Waveform Monitor

- Confirm the Electronic Shutter Switch is set to OFF position and High Gain Selection Switch is set to 0 dB.

- Set the White Balance Selection Switch to AWC A position.
- Aim the Camera at the Logarithmic Gray Scale Chart (lighting is 2,000 lux, 3,200°K).
- Set the Iris Control Selection Switch of Lens to M (Manual) position and adjust Lens iris so that the Video signal level of the Waveform Monitor becomes 0.63V.
- Execute the AWC.
- Cap on the Lens.

<1> Execute the ABC while pressing the Data Input Switch SW1 on the System Control Board and confirm the screen of the Viewfinder is changing to ABC ADJ mode.
<2> Set the R ch by the Page Switch SW8.
<3> Adjust the Up Switch SW6 and Down Switch SW5 so that the vector positions at center of the Vectorscope.
<4> Set the B ch by the Page Switch SW8.
<5> Adjust the Up Switch SW6 and Down Switch SW5 so that the vector positions at center of the Vectorscope.
<6> Push the Data Input Switch SW1 on the System Control Board.
<7> Execute the ABC while pressing the Check Button on the Mother Board.
<8> Execute the ABC while pressing the Recording Time Reset Button on the Mother Board.
<9> Repeat the procedure <1> – <6> again.
<10> Execute the ABC (pressing more than 3 seconds).
<11> Repeat the procedure <8> again.

P. 2-16

(36) Auto White Control Adjustment

Adjust: **SW1 (DATA INPUT SWITCH)**
System Control Board
SW8 (PAGE SWITCH)
Mother Board
SW6 (UP SWITCH)
Mother Board
SW5 (DOWN SWITCH)
Mother Board

Observe: **Waveform Monitor**
Vectorscope

- Aim the Camera at the Logarithmic Gray Scale Chart (lighting is 2,000 lux, 3,200°K).
- Confirm the Electronic Shutter Switch is set to OFF position and High Gain Selection Switch is set to 0 dB position.
- Set the White Balance Selection Switch to AWC A position and Filter Selection Wheel to 1 position.

<1> Set the Lens Iris so that the waveform level becomes 0.63V.
<2> Execute the AWC.
<3> Execute the AWC while pressing Data Input Switch SW1 on the System Control Board and confirm Electronic Viewfinder screen indicate to ADJ mode.

```
AWC ADJ
PAGE  : SELECT        RCH
UP    : DATA +
DOWN  : DATA -
```

<4> Adjust the Up Switch SW6 and Down Switch SW5 on the Mother Board so that the vector positions at center of the Vectorscope and push Data Input Switch SW1 on the System Control Board when finished this adjustment.
<5> Select the B ch mode by the Page Switch.
<6> Repeat the procedure <4> again.
<7> Set the Electronic Shutter Switch, High Gain Selection Switch according to the Table 4-1 and execute AWC.

Note: Keep the Video output level for 0.63V by the lens iris.

Color Bar/ +6dB/ Camera Selection Switch	High Gain Selection Switch	Gain (dB)	Electronic Shutter					
			OFF	1/120	1/250	1/500	1/1000	1/2000
CAM	0 dB	0 dB	-	1	2	3	4	5
+6 dB	0 dB	+6 dB	6	7	8	9	10	11
CAM	+9 dB	+9 dB	12	13	14	15	16	17
+6 dB	+9 dB	+15 dB	18	19	20	21	22	23
CAM	+18 dB	+18 dB	24	25	26	27	28	29
+6 dB	+18 dB	+24 dB	30	31	32	33	34	35

Table 4-1

■ Adjustment procedure of auto scan by the Remote Control Box (RCB):

- Connect the RCB Cable between Remote Control Unit Extension connector on the RCB and RCB Connector on the lest side of the Camera.
- Turn ON the RCB Operation Switch on the RCB.
- Set the High Gain Switch to + 9 dB or + 18 dB.
- Set the Iris Selection Switch of the RCB to Auto position.
- Set the Lens Iris Selection Switch on the front of the Camera to 1/2 CLOSE position.
- Execute the AWC while pressing Recording Time Reset Button SW1 on the Setup Board the Camera.

Note: If stop the auto scan, turn off the RCB Operation Switch on the RCB to BAR position.

(37) Flare Adjustment

Adjust: **SW1 (DATA INPUT SWITCH)**
System Control Board
SW5 (DOWN SWITCH)
Mother Board
SW6 (UP SWITCH)
Mother Board
SW7 (ITEM SWITCH)
Mother Board
SW8 (PAGE SWITCH)
Mother Board
SW9 (USER SET SWITCH)
Mother Board
SW10 (SCENE FILE SELECTION SWITCH)
Mother Board
SW14 (CHECK BUTTON)
Mother Board

- Aim the Camera at the Logarithmic Gray Scale Chart (lighting is 2,000 lux, 3,200°K).
- Set the arrow to "FLARE" by the Item Switch SW7 on the Mother Board and set to ON.
- Set the lens iris so that the Video output level becomes 0.7V and not the F (A).
- Open 2F lens iris from (A).
- Set the Scene File Selection Switch SW10 on the Mother Board to 1 position.

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- Set the User Set Switch SW9 on the Mother Board to 1 position while pressing the Data Input Switch SW1 on the System Control Board.
- Select the USER SET MENU 3 by the Page Switch SW8 on the Mother Board.
- Set the arrow to "FLARE GREEN" by the Item Switch SW7 on the Mother Board.
- Adjust data by the Up Switch SW6 and Down Switch SW5 on the Mother Board so that the carrier leak on the lowest step on gray scale becomes minimum as shown in the Fig. 4-2-32.
- Set the arrow to "FLARE RED" by the Item Switch SW7 on the Mother Board.
- Adjust data by the Up Switch SW6 and Down Switch SW5 on the Mother Board so that the carrier leak on the lowest step on gray scale becomes minimum as shown in the Fig. 4-2-32.
- Set the arrow to "FLARE BLUE" by the Item Switch SW7 on the Mother Board.
- Adjust data by the Up Switch SW6 and Down Switch SW5 on the Mother Board so that the carrier leak on the lowest step on gray scale becomes minimum as shown in the Fig. 4-2-32.
- Repeat the adjustment of GREEN, RED, and BLUE of FLARE so that the carrier leak on the lowest step of gray scale becomes minimum as shown in the Fig. 4-2-32.
- Set the User Set Switch SW9 to OFF position.

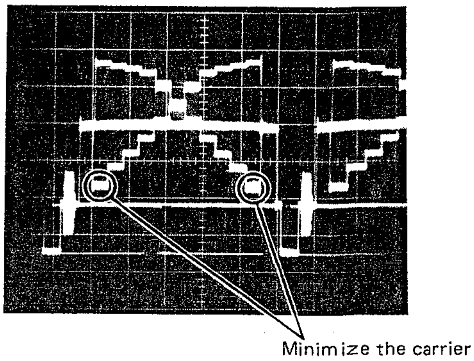


Fig. 4-2-32

(38) Anti Close Adjustment

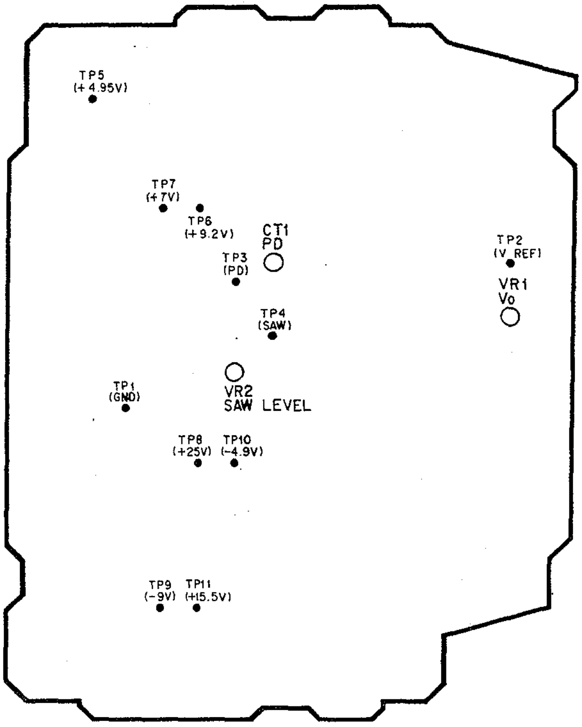
Adjust: **VR2 (ANTI CLOSE)**
Preprocess Board

Observe: **Waveform Monitor**

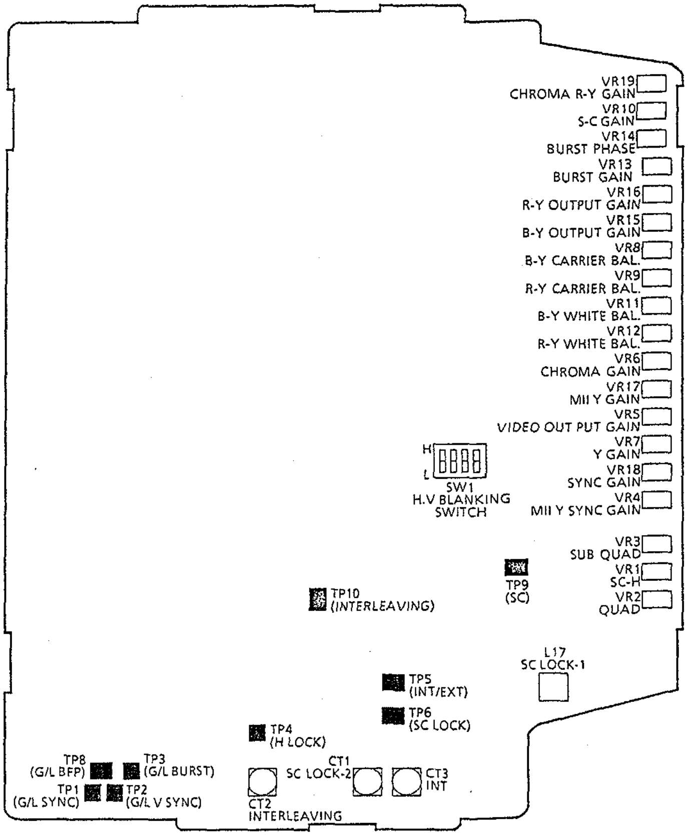
- Set the Lens Iris Control Switch to AUTO position.
- Aim the Camera at the halogen lamp.
- Adjust VR2 (ANTI CLOSE) on the Preprocess Board so that the lens iris becomes F16.
- Cap on the lens.
- Confirm that the lens iris becomes F16 when the cap is taken off the lens.
- If not, readjust VR2 again.

5. LOCATION OF TEST POINTS AND ADJUSTING CONTROLS

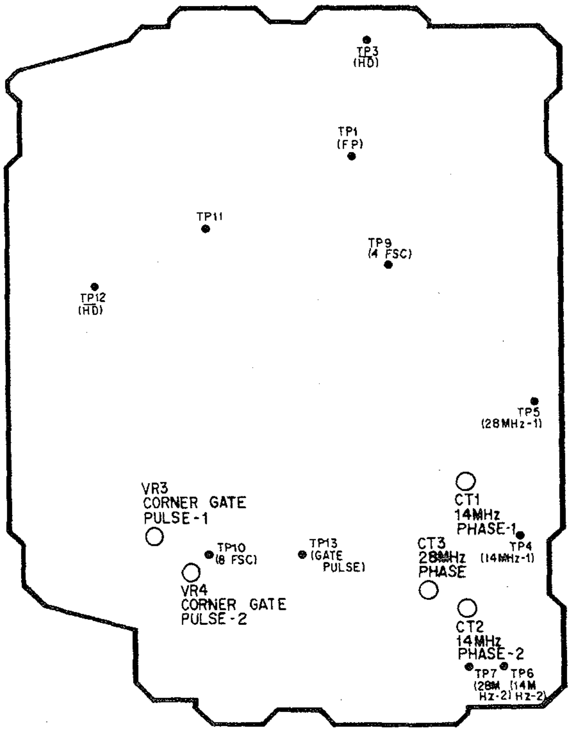
POWER BOARD


TP5
(+4.95V)
TP7
(+7V)
TP6
(+9.2V)
CT1
PD
TP3
(PD)
TP2
(V REF)
VR1
Vo
TP4
(SAW)
TP1
(GND)
VR2
SAW LEVEL
TP8
(+25V)
TP10
(-4.9V)
TP9
(-9V)
TP11
(+15.5V)

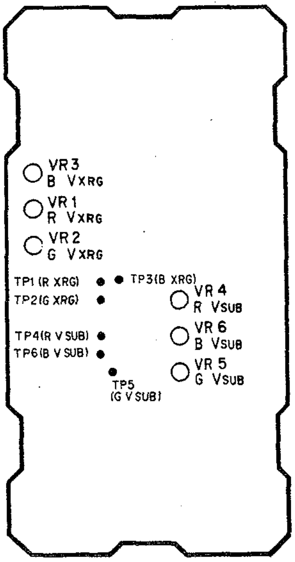
SYNC/ENCODER BOARD (COMPONENT SIDE)


VR19
CHROMA R-Y GAIN
VR10
S-C GAIN
VR14
BURST PHASE
VR13
BURST GAIN
VR16
R-Y OUTPUT GAIN
VR15
B-Y OUTPUT GAIN
VR8
B-Y CARRIER BAL.
VR9
R-Y CARRIER BAL.
VR11
B-Y WHITE BAL.
VR12
R-Y WHITE BAL.
VR6
CHROMA GAIN
VR17
MII Y GAIN
VR5
VIDEO OUT PUT GAIN
VR7
Y GAIN
VR18
SYNC GAIN
VR4
MII Y SYNC GAIN
H
L
SW1
H.V BLANKING
SWITCH
VR3
SUB QUAD
VR1
SC-H
VR2
QUAD
TP9
(SC)
TP10
(INTERLEAVING)
L17
SC LOCK-1
TP5
(INT/EXT)
TP6
(SC LOCK)
TP4
(H LOCK)
TP8
(G/L BFP)
TP3
(G/L BURST)
TP1
(G/L SYNC)
TP2
(G/L V SYNC)
CT1
SC LOCK-2
CT3
INT
CT2
INTERLEAVING

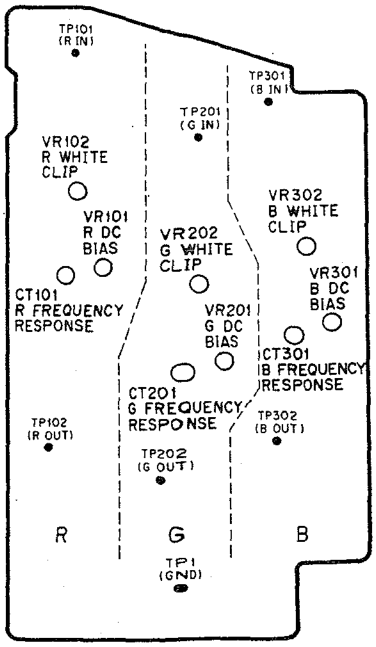
DIGITAL PROCESS BOARD


TP3
(HD)
TP1
(FP)
TP11
TP9
(4 FSC)
TP12
(HD)
TP5
(28MHz-1)
VR3
CORNER GATE
PULSE-1
CT1
14MHz
PHASE-1
TP10
(8 FSC)
TP13
(GATE
PULSE)
CT3
28MHz
PHASE
TP4
(14MHz-1)
VR4
CORNER GATE
PULSE-2
CT2
14MHz
PHASE-2
TP7
(28M
Hz-2)
TP6
(14M
Hz-2)

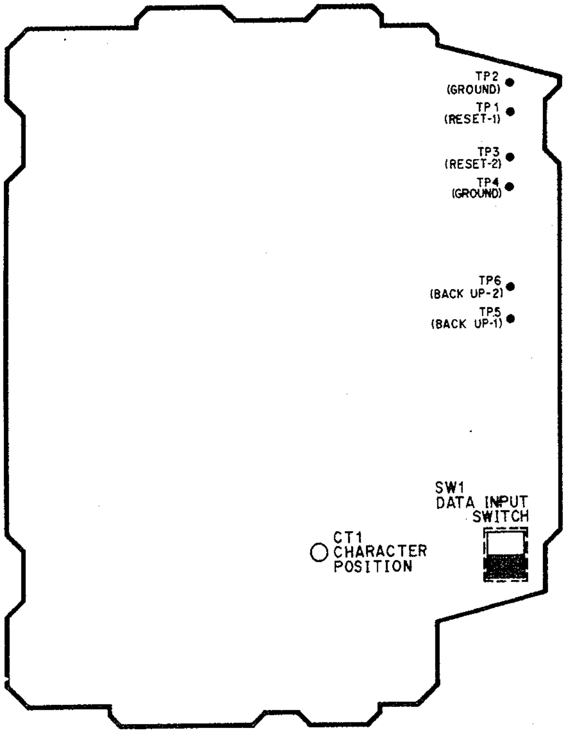
DRIVE BOARD


VR3
B VXRG
VR1
R VXRG
VR2
G VXRG
TP1 (R XRG)
TP3(B XRG)
TP2(G XRG)
VR4
R VSUB
TP4(R V SUB)
TP6(B V SUB)
VR6
B VSUB
VR5
G VSUB
TP5
(G V SUB)

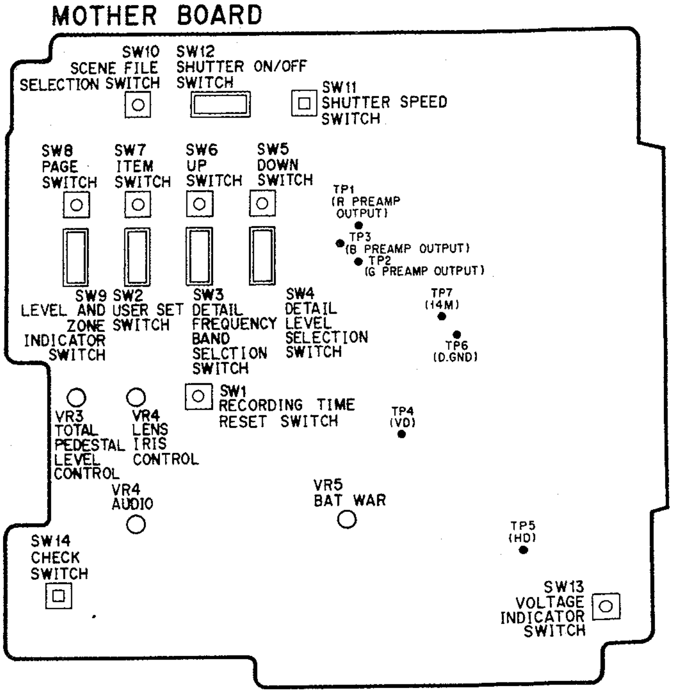
PREAMP BOARD


TP101
(R IN)
TP301
(B IN)
TP201
(G IN)
VR102
R WHITE
CLIP
VR302
B WHITE
CLIP
VR101
R DC
BIAS
VR202
G WHITE
CLIP
VR301
B DC
BIAS
CT101
R FREQUENCY
RESPONSE
VR201
G DC
BIAS
CT301
B FREQUENCY
RESPONSE
CT201
G FREQUENCY
RESPONSE
TP102
(R OUT)
TP302
(B OUT)
TP202
(G OUT)
R
G
B
TP1
(GND)

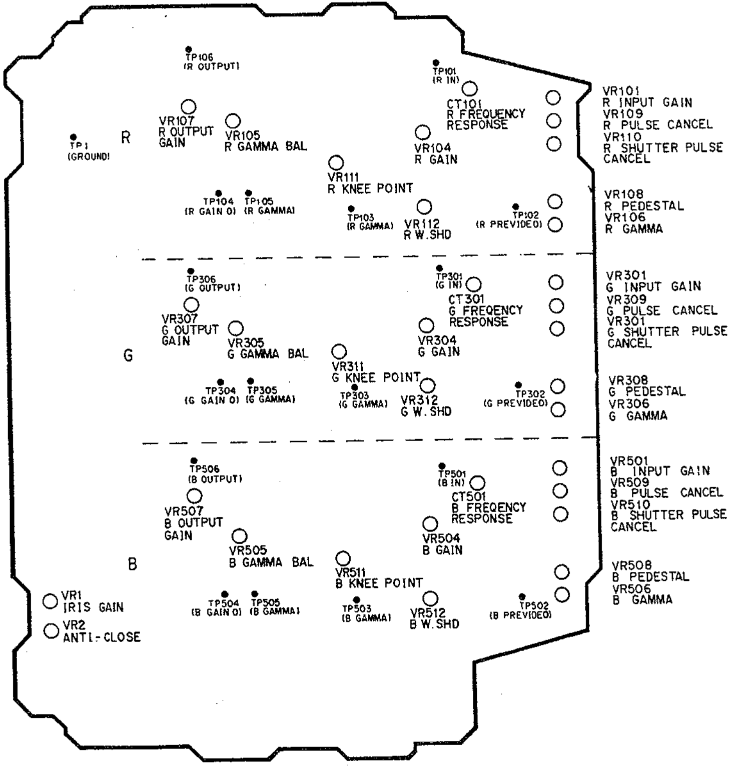
SYSTEM CONTROL BOARD


TP2 (GROUND)
TP1 (RESET-1)
TP3 (RESET-2)
TP4 (GROUND)
TP6 (BACK UP-2)
TP5 (BACK UP-1)
SW1 DATA INPUT SWITCH
CT1 CHARACTER POSITION

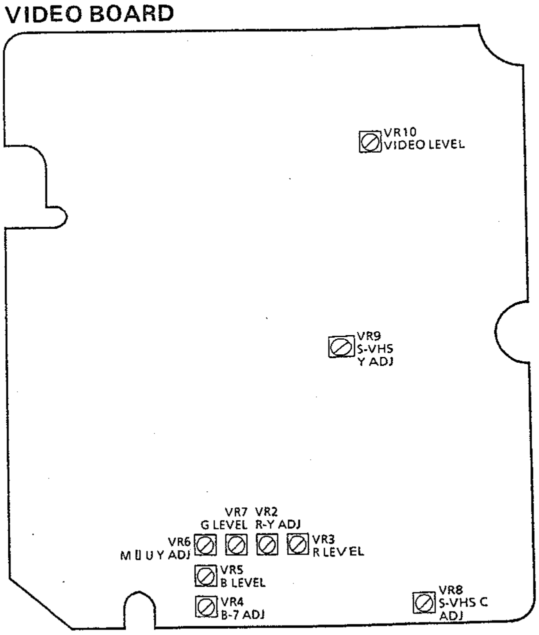
MOTHER BOARD


SW10 SCENE FILE SELECTION SWITCH
SW12 SHUTTER ON/OFF SWITCH
SW11 SHUTTER SPEED SWITCH
SW8 PAGE SWITCH
SW7 ITEM SWITCH
SW6 UP SWITCH
SW5 DOWN SWITCH
TP1 (R PREAMP OUTPUT)
TP3 (B PREAMP OUTPUT)
TP2 (G PREAMP OUTPUT)
SW9 LEVEL AND ZONE INDICATOR SWITCH
SW2 USER SET SWITCH
SW3 DETAIL FREQUENCY BAND SELCTION SWITCH
SW4 DETAIL LEVEL SELECTION SWITCH
TP7 (14M)
TP6 (D.GND)
SW1 RECORDING TIME RESET SWITCH
TP4 (VD)
VR3 TOTAL PEDESTAL LEVEL CONTROL
VR4 LENS IRIS CONTROL
VR4 AUDIO
VR5 BAT WAR
TP5 (HD)
SW14 CHECK SWITCH
SW13 VOLTAGE INDICATOR SWITCH

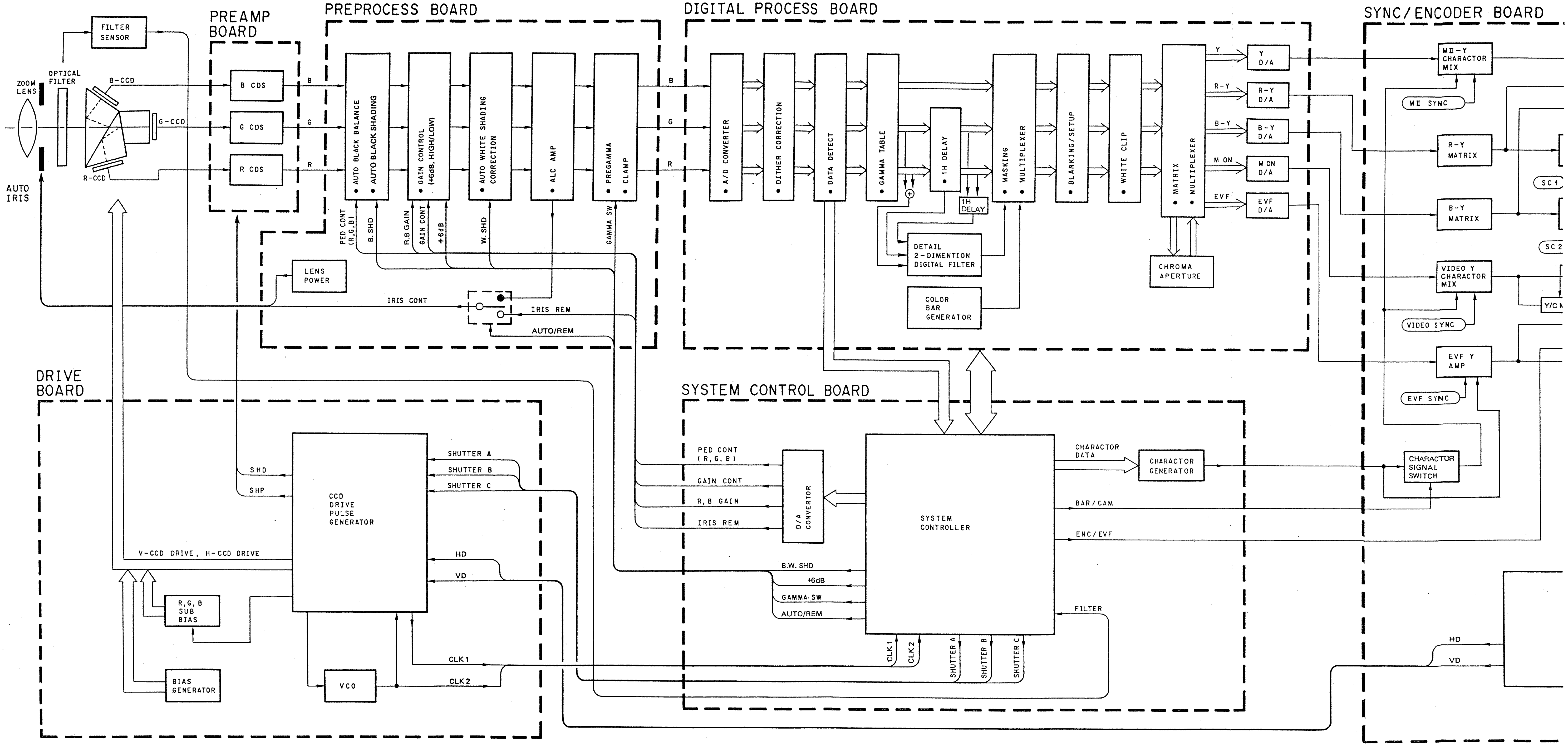
PRE PROCESS BOARD


TP106 (R OUTPUT)
TP101 (R IN)
CT101 R FREQUENCY RESPONSE
VR101 R INPUT GAIN
VR109 R PULSE CANCEL
VR110 R SHUTTER PULSE CANCEL
TP1 (GROUND)
R
VR107 R OUTPUT GAIN
VR105 R GAMMA BAL
VR104 R GAIN
VR111 R KNEE POINT
TP104 (R GAIN 0)
TP105 (R GAMMA)
TP103 (R GAMMA)
VR112 R W.SHD
TP102 (R PREVIDEO)
VR108 R PEDESTAL
VR106 R GAMMA
TP306 (G OUTPUT)
TP301 (G IN)
CT301 G FREQENCY RESPONSE
VR301 G INPUT GAIN
VR309 G PULSE CANCEL
VR301 G SHUTTER PULSE CANCEL
VR307 G OUTPUT GAIN
VR305 G GAMMA BAL
VR304 G GAIN
G
VR311 G KNEE POINT
TP304 (G GAIN 0)
TP305 (G GAMMA)
TP303 (G GAMMA)
VR312 G W.SHD
TP302 (G PREVIDEO)
VR308 G PEDESTAL
VR306 G GAMMA
TP506 (B OUTPUT)
TP501 (B IN)
CT501 B FREQENCY RESPONSE
VR501 B INPUT GAIN
VR509 B PULSE CANCEL
VR510 B SHUTTER PULSE CANCEL
VR507 B OUTPUT GAIN
VR505 B GAMMA BAL
VR504 B GAIN
B
VR511 B KNEE POINT
VR508 B PEDESTAL
VR506 B GAMMA
VR1 IRIS GAIN
VR2 ANTI-CLOSE
TP504 (B GAIN 0)
TP505 (B GAMMA)
TP503 (B GAMMA)
VR512 B W.SHD
TP502 (B PREVIDEO)

VIDEO BOARD

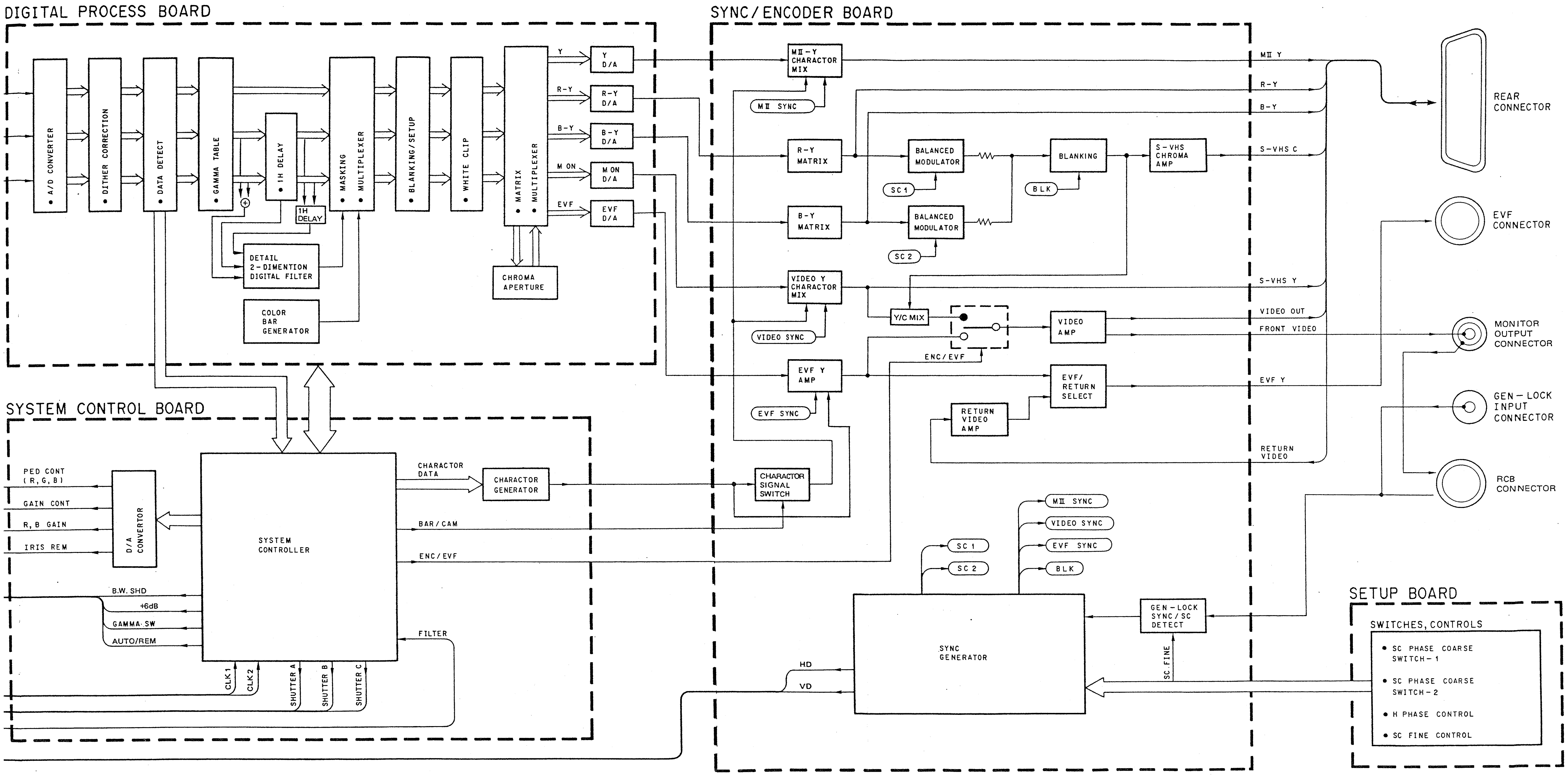

VR10 VIDEO LEVEL
VR9 S-VHS Y ADJ
VR7 G LEVEL
VR2 R-Y ADJ
VR6 M U U Y ADJ
VR3 R LEVEL
VR5 B LEVEL
VR4 B-7 ADJ
VR8 S-VHS C ADJ

OUTLINE BLOCK DIAGRAM



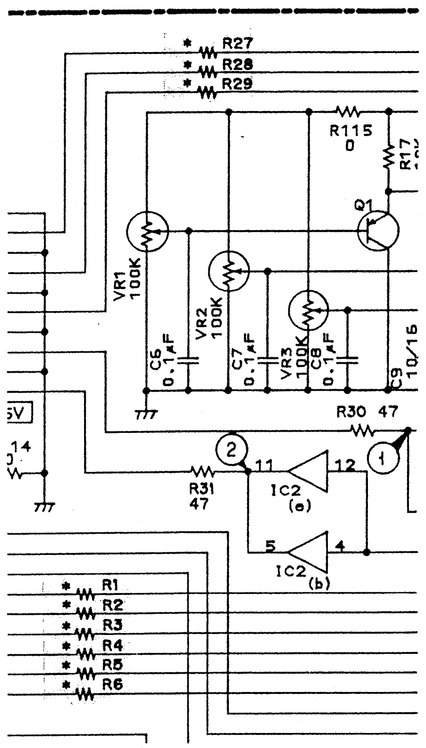
ZOOM LENS
OPTICAL FILTER
FILTER SENSOR
AUTO IRIS
B-CCD
G-CCD
R-CCD
PREAMP BOARD
B CDS
G CDS
R CDS
B
G
R
PREPROCESS BOARD
AUTO BLACK BALANCE
AUTO BLACK SHADING
GAIN CONTROL (+6dB, HIGH/LOW)
AUTO WHITE SHADING CORRECTION
ALC AMP
PREGAMMA
CLAMP
PED CONT (R,G,B)
B. SHD
R.B GAIN
GAIN CONT
+6dB
W. SHD
GAMMA SW
LENS POWER
IRIS CONT
IRIS REM
AUTO/REM
DIGITAL PROCESS BOARD
A/D CONVERTER
DITHER CORRECTION
DATA DETECT
GAMMA TABLE
1H DELAY
1H DELAY
DETAIL 2-DIMENTION DIGITAL FILTER
COLOR BAR GENERATOR
MASKING
MULTIPLEXER
BLANKING/SETUP
WHITE CLIP
MATRIX
MULTIPLEXER
CHROMA APERTURE
Y
R-Y
B-Y
M ON
EVF
Y D/A
R-Y D/A
B-Y D/A
M ON D/A
EVF D/A
SYNC/ENCODER BOARD
MII-Y CHARACTOR MIX
MII SYNC
R-Y MATRIX
B-Y MATRIX
SC 1
SC 2
VIDEO Y CHARACTOR MIX
VIDEO SYNC
Y/C M
EVF Y AMP
EVF SYNC
CHARACTOR SIGNAL SWITCH
HD
VD
DRIVE BOARD
CCD DRIVE PULSE GENERATOR
SHUTTER A
SHUTTER B
SHUTTER C
SHD
SHP
V-CCD DRIVE, H-CCD DRIVE
HD
VD
R,G,B SUB BIAS
BIAS GENERATOR
VCO
CLK1
CLK2
SYSTEM CONTROL BOARD
PED CONT (R,G,B)
GAIN CONT
R,B GAIN
IRIS REM
D/A CONVERTOR
SYSTEM CONTROLLER
B.W. SHD
+6dB
GAMMA SW
AUTO/REM
CHARACTOR DATA
CHARACTOR GENERATOR
BAR/CAM
ENC/EVF
FILTER
CLK1
CLK2
SHUTTER A
SHUTTER B
SHUTTER C

OUTLINE BLOCK DIAGRAM

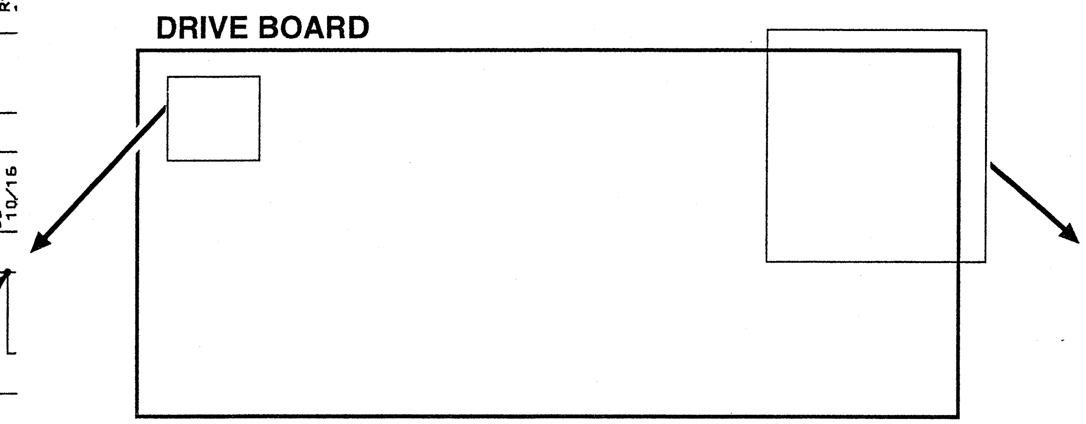

DIGITAL PROCESS BOARD
A/D CONVERTER
DITHER CORRECTION
DATA DETECT
GAMMA TABLE
1H DELAY
1H DELAY
MASKING
MULTIPLEXER
BLANKING/SETUP
WHITE CLIP
MATRIX
MULTIPLEXER
DETAIL 2-DIMENTION DIGITAL FILTER
COLOR BAR GENERATOR
CHROMA APERTURE
Y
R-Y
B-Y
M ON
EVF
Y D/A
R-Y D/A
B-Y D/A
M ON D/A
EVF D/A
SYNC/ENCODER BOARD
MII-Y CHARACTOR MIX
MII SYNC
R-Y MATRIX
B-Y MATRIX
BALANCED MODULATOR
BALANCED MODULATOR
SC 1
SC 2
BLANKING
BLK
S-VHS CHROMA AMP
VIDEO Y CHARACTOR MIX
VIDEO SYNC
Y/C MIX
VIDEO AMP
ENC/EVF
EVF Y AMP
EVF SYNC
EVF/ RETURN SELECT
RETURN VIDEO AMP
CHARACTOR SIGNAL SWITCH
MII SYNC
VIDEO SYNC
EVF SYNC
BLK
SC 1
SC 2
SYNC GENERATOR
GEN-LOCK SYNC/SC DETECT
SC FINE
HD
VD
MII Y
R-Y
B-Y
S-VHS C
S-VHS Y
VIDEO OUT
FRONT VIDEO
EVF Y
RETURN VIDEO
REAR CONNECTOR
EVF CONNECTOR
MONITOR OUTPUT CONNECTOR
GEN-LOCK INPUT CONNECTOR
RCB CONNECTOR
SYSTEM CONTROL BOARD
PED CONT (R,G,B)
GAIN CONT
R,B GAIN
IRIS REM
D/A CONVERTOR
SYSTEM CONTROLLER
CHARACTOR DATA
CHARACTOR GENERATOR
BAR/CAM
ENC/EVF
B.W. SHD
+6dB
GAMMA SW
AUTO/REM
FILTER
CLK 1
CLK 2
SHUTTER A
SHUTTER B
SHUTTER C
SETUP BOARD
SWITCHES, CONTROLS
• SC PHASE COARSE SWITCH-1
• SC PHASE COARSE SWITCH-2
• H PHASE CONTROL
• SC FINE CONTROL

SCHEMATIC DIAGRAM OF DRIVE BOARD

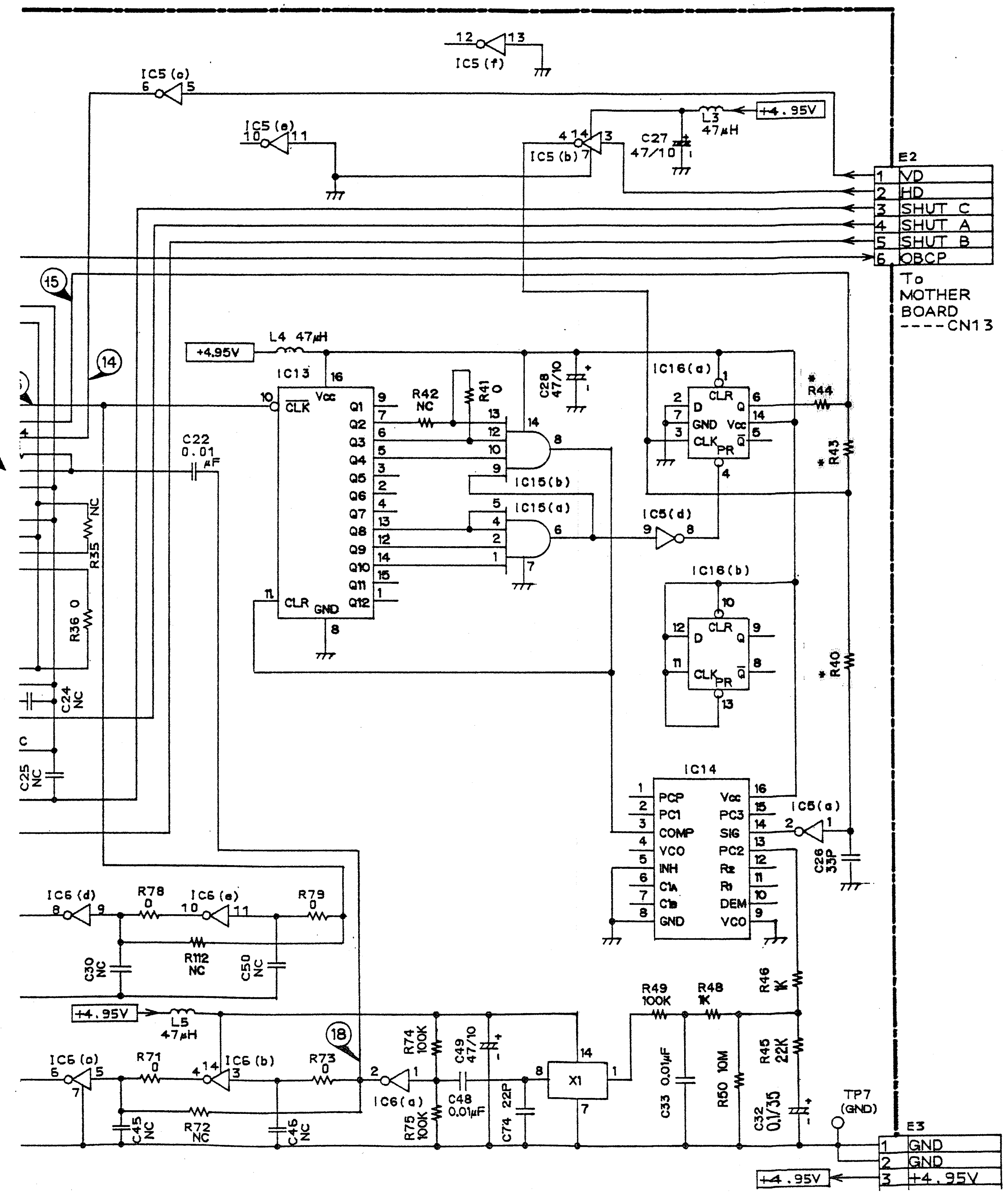
Shcematic diagram of the Drive Board have been corrected.



R27
R28
R29
R115 0
R17
Q1
VR1 100K
VR2 100K
VR3 100K
C6 0.1μF
C7 0.1μF
C8 0.1μF
C9 10/16
R30 47
R31 47
IC2 (a)
IC2 (b)
R1
R2
R3
R4
R5
R6



DRIVE BOARD



IC5 (a)
IC5 (f)
IC5 (e)
IC5 (b)
C27 47/10
L3 47μH
+4.95V
E2
1 VD
2 HD
3 SHUT C
4 SHUT A
5 SHUT B
6 OBCP
To MOTHER BOARD ----CN13
L4 47μH
IC13
R42 NC
R41 0
C28 47/10
IC15 (b)
IC15 (a)
IC16 (a)
IC16 (b)
IC5 (d)
R44
R43
R40
C22 0.01μF
R35 NC
R36 0
C24 NC
C25 NC
IC14
IC5 (c)
C26 33P
IC6 (d)
R78 0
IC6 (e)
R79 0
R112 NC
C30 NC
C50 NC
L5 47μH
IC6 (a)
R71 0
IC6 (b)
R73 0
IC6 (c)
C45 NC
R72 NC
C46 NC
R74 100K
R75 100K
C49 47/10
C48 0.01μF
C74 22P
X1
R49 100K
R48 1K
R46 1K
C33 0.01μF
R50 10M
R45 22K
C32 0.1/35
TP7 (GND)
E3
1 GND
2 GND
3 +4.95V

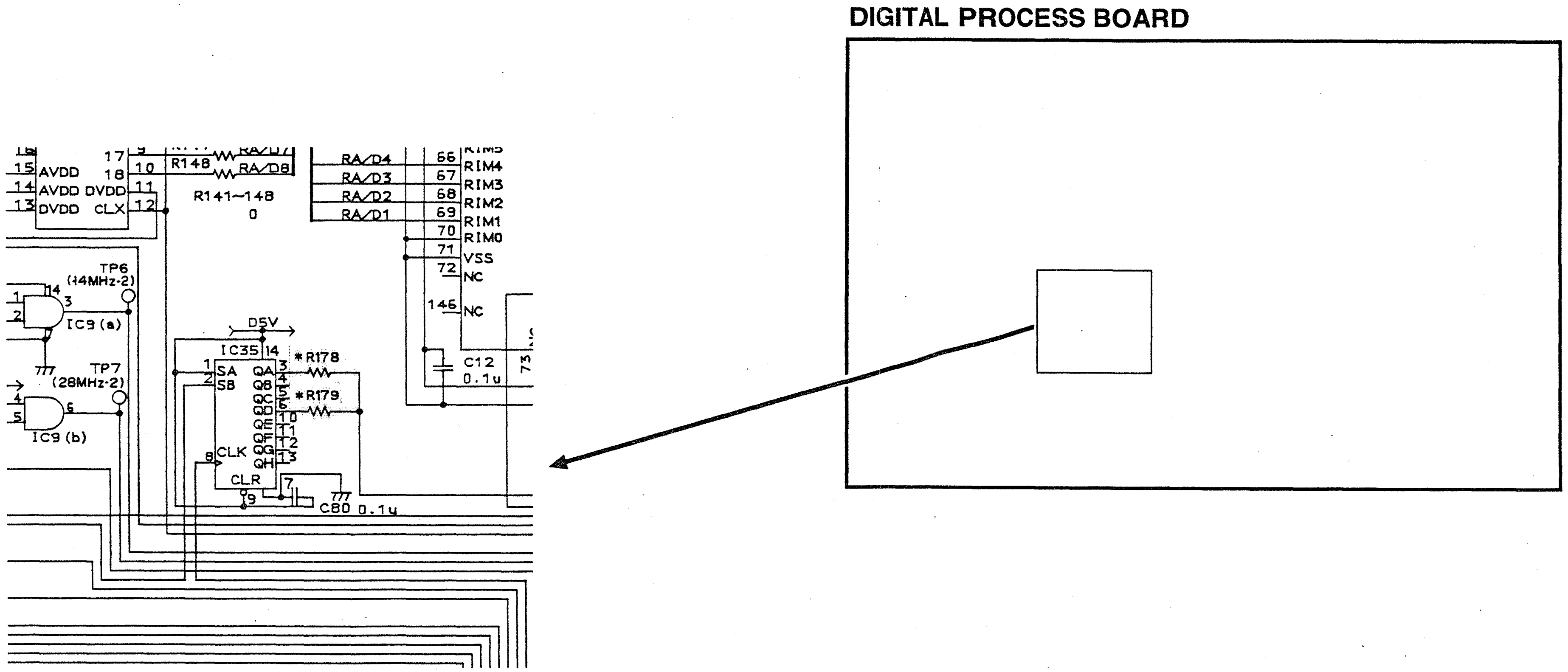
1. R40 and R44 have been changed.

*

	PAL	NTSC
R40	2.4K	2.2K
R43	NC	0
R44	4.7K	NC
R1-R6 R27-R29	47	33

SCHEMATIC DIAGRAM OF DIGITAL PROCESS BOARD

Shcematic diagram of the Digital Process Board have been corrected.



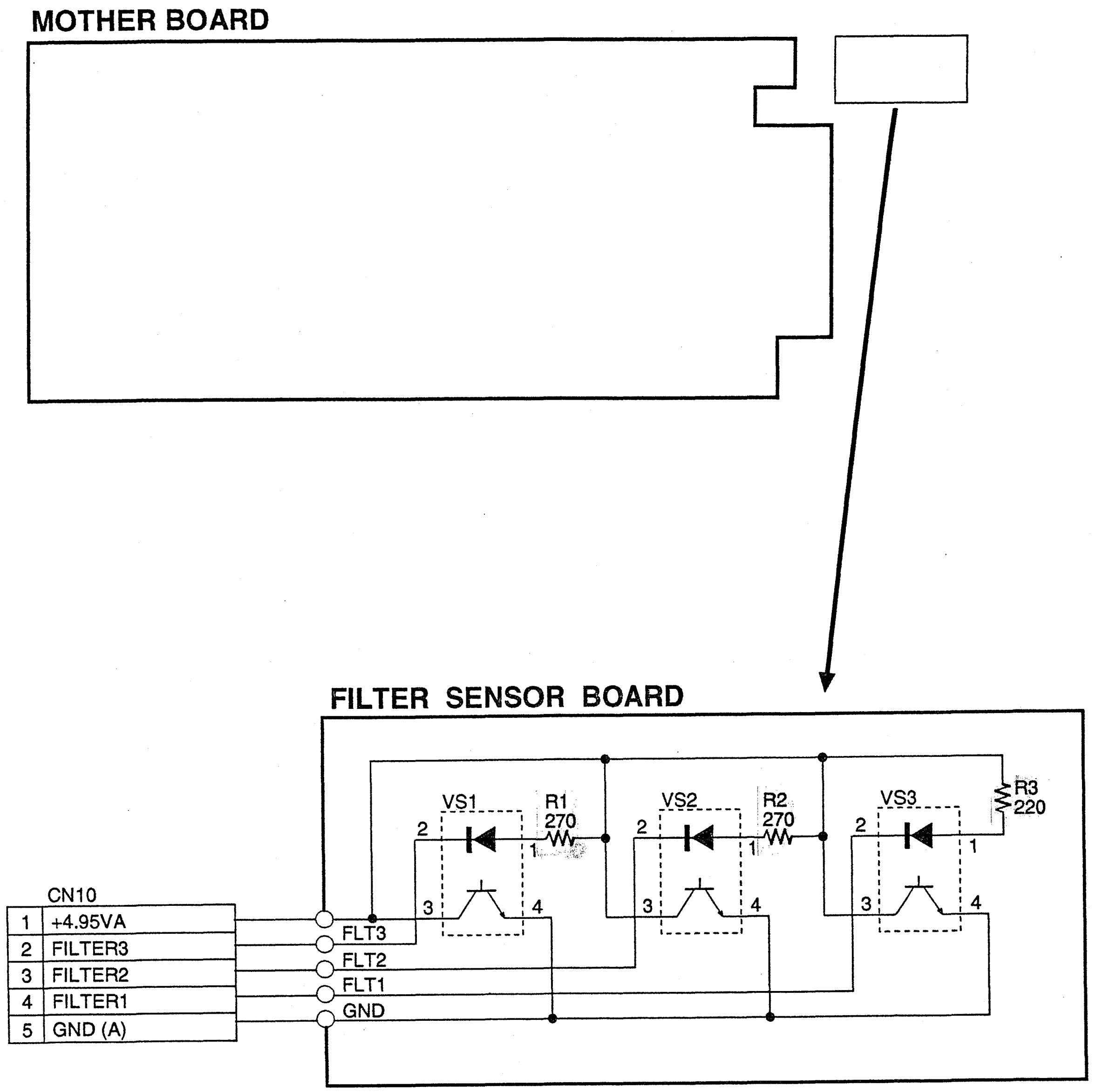
DIGITAL PROCESS BOARD
AVDD
AVDD
DVDD
DVDD
CLX
R148
RA/D8
R141~148
0
RA/D4
RA/D3
RA/D2
RA/D1
RIM4
RIM3
RIM2
RIM1
RIM0
VSS
NC
NC
TP6
(14MHz-2)
IC9 (a)
TP7
(28MHz-2)
IC9 (b)
D5V
IC35
SA
SB
QA
QB
QC
QD
QE
QF
QG
QH
CLK
CLR
*R178
*R179
C12
0.1u
C80 0.1u

*

	PAL	NTSC
R178	0	NC
R179	NC	0

SCHEMATIC DIAGRAM OF FILTER SENSOR BOARD

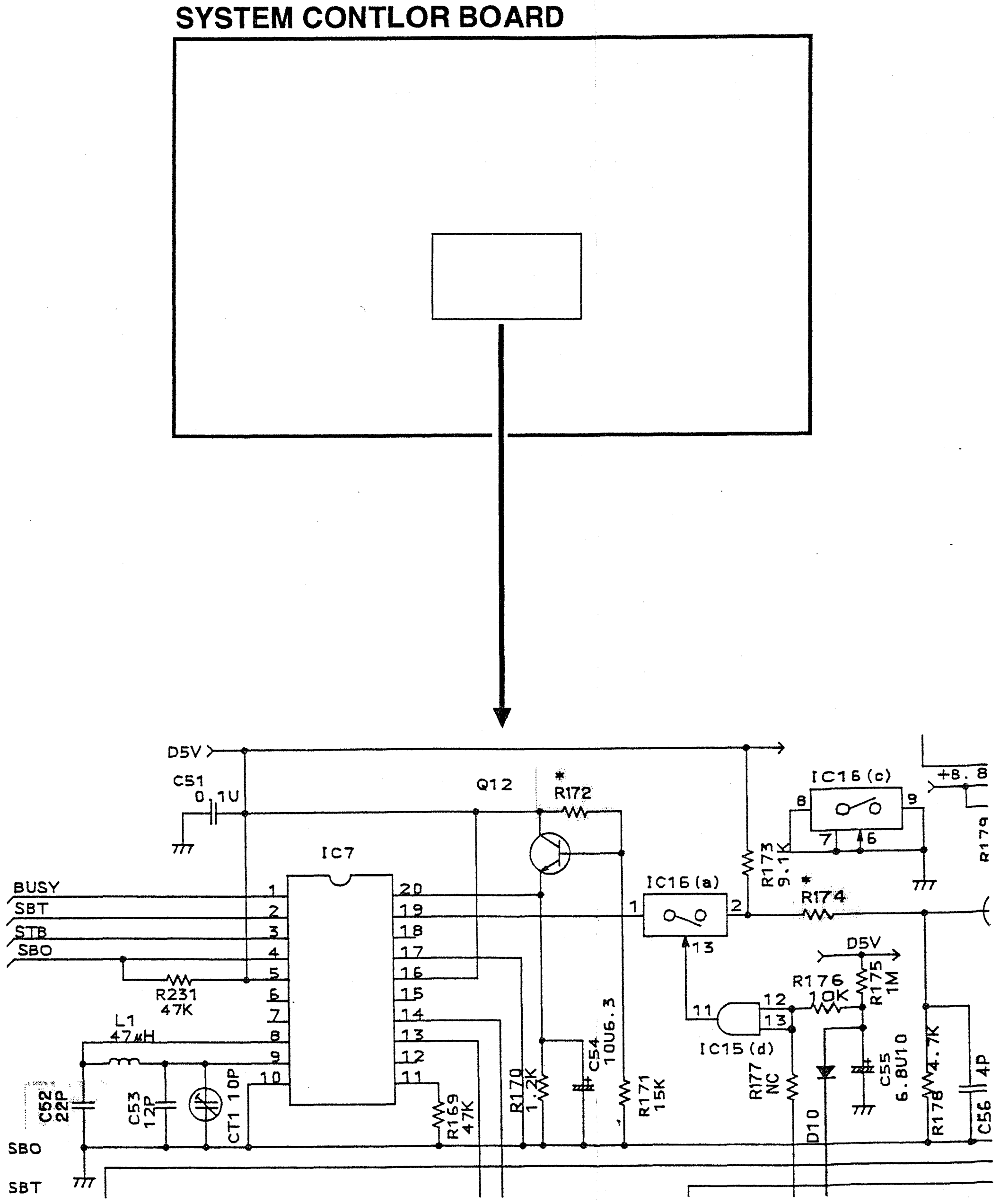
Shcematic diagram of the Filter Sensor Board have been corrected.


MOTHER BOARD
FILTER SENSOR BOARD
VS1
R1
270
VS2
R2
270
VS3
R3
220
CN10
1 +4.95VA
2 FILTER3
3 FILTER2
4 FILTER1
5 GND (A)
FLT3
FLT2
FLT1
GND
1
2
3
4

1. R1, R2, and R3 have been changed.

SCHEMATIC DIAGRAM OF SYSTEM CONTROL BOARD

Shcematic diagram of the System Control Board have been corrected.


SYSTEM CONTLOR BOARD
D5V
C51
0.1U
Q12
*
R172
IC7
BUSY
SBT
STB
SBO
R231
47K
L1
47μH
C52
22P
C53
12P
CT1 10P
R169
47K
R170
1.2K
C54
10U6.3
R171
15K
IC16 (a)
IC16 (c)
+8.8
R173
9.1K
*
R174
D5V
R176
10K
R175
1M
IC15 (d)
R177
NC
D10
C55
6.8U10
R178
4.7K
C56
4P
SBO
SBT

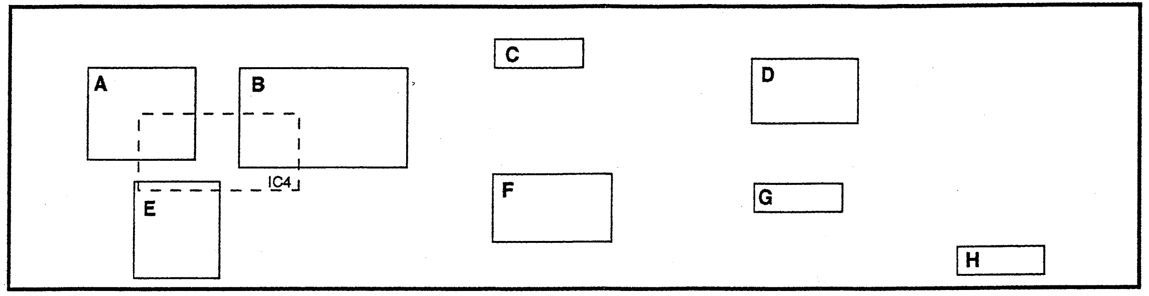
1. C52 has been changed.

*	PAL	NTSC
R172	18K	8.2K
R174	13K	18K

SCHEMATIC DIAGRAM OF Sync/Encoder BOARD

Shcematic diagram of the Sync/Encoder Board have been corrected.

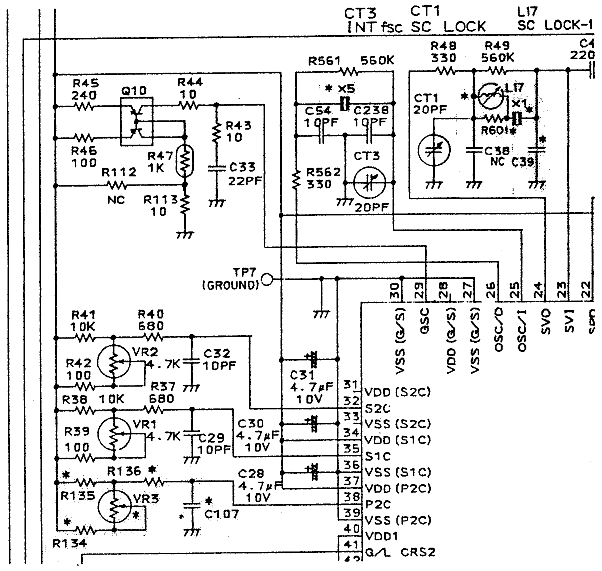
SYNC/ENCODER BOARD



A
B
C
D
E
F
G
H
IC4

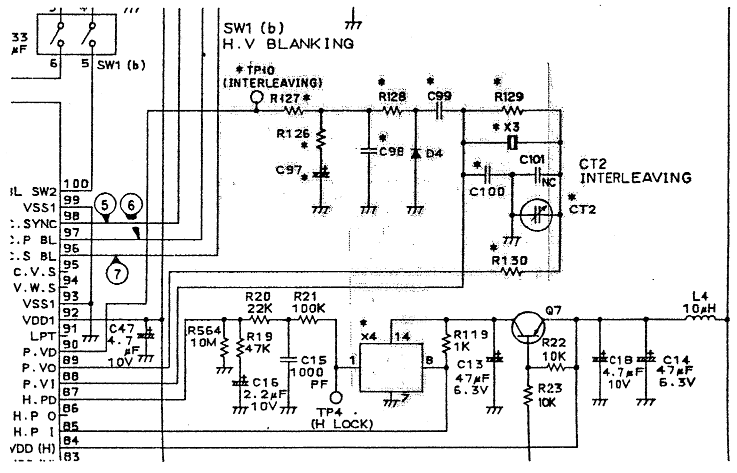
1. C144 has changed.
2. C308 and two Jumper wires have been added, one pattern foil has been cut.

A



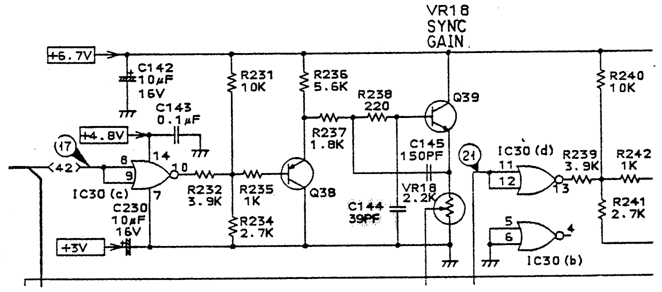
CT3 INT fsc
CT1 SC LOCK
L17 SC LOCK-1
R561 560K
R48 330
R49 560K
C4 220
R45 240
Q10
R44 10
R43 10
R46 100
R47 1K
R112 1K
R113 10
C33 22PF
NC
C54 10PF
C238 10PF
X5
CT1 20PF
X1
L17
R601
C38 NC
C39
R562 330
CT3 20PF
TP7 (GROUND)
R41 10K
R40 680
R42 100
VR2
C32 10PF
R37 4.7K
R38 10K
680
R39 100
VR1
C29 10PF
4.7K
C31 4.7μF 10V
C30 4.7μF 10V
C28 4.7μF 10V
R136
R135
VR3
C107
R134
VSS (G/S)
OSC
VDD (G/S)
VSS (G/S)
OSC/O
OSC/I
SVO
SV1
VDD (S2C)
S2C
VSS (S2C)
VDD (S1C)
S1C
VSS (S1C)
VDD (P2C)
P2C
VSS (P2C)
VDD1
CRS2

B



33 μF
SW1 (b)
SW1 (b) H.V BLANKING
TP10 (INTERLEAVING)
R127
R128
C99
R129
X3
R126
C98
D4
C97
C100
C101
NC
CT2 INTERLEAVING
CT2
R130
SW2
VSS1
SYNC
P BL
S BL
C.V.S
V.W.S
VSS1
VDD1
LPT
P.VD
P.VO
P.VI
H.PD
H.P O
H.P I
VDD (H)
C47 4.7μF 10V
R564 10M
R20 22K
R21 100K
R19 47K
C15 1000 PF
C16 2.2μF 10V
X4
TP4 (H LOCK)
R119 1K
C13 47μF 6.3V
Q7
R22 10K
R23 10K
C18 4.7μF 10V
C14 47μF 6.3V
L4 10μH

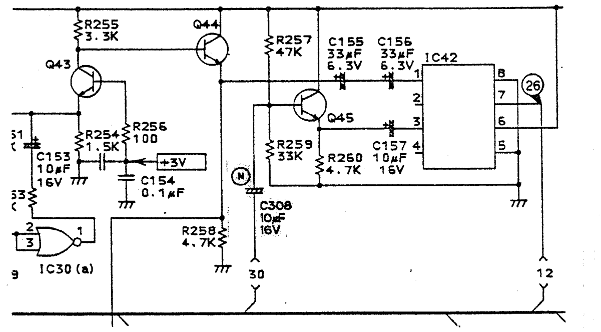
C



+6.7V
C142 10μF 16V
C143 0.1μF
+4.8V
R231 10K
R236 5.6K
R238 220
Q39
VR18 SYNC GAIN
R240 10K
R237 1.8K
IC30 (c)
C230 10μF 16V
R232 3.9K
R235 1K
Q38
C145 150PF
IC30 (d)
R239 3.9K
R242 1K
R241 2.7K
R234 2.7K
C144 39PF
VR18 2.2K
IC30 (b)
+3V

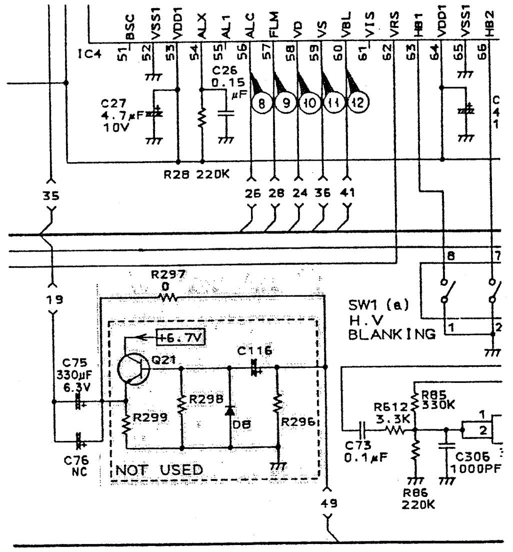
	PAL	NTSC
R126	220	NC
R127	33K	NC
R128	100K	NC
R129	560K	NC
R130	330	NC
R133	6.8K	NC
R134	100	NC
R135	10K	NC
R136	1K	NC
R337	22K	NC
R338	1K	NC
R401	150	NC
R408	56K	NC
R413	130	120
R414	NC	0
R415	3.3K	NC
R513	33K	NC
R514	33K	NC
R544	1K	NC
R558	56K	NC
R565	10	NC
R566	NC	10
R567	100K	NC
R568	100K	NC
R569	33K	NC
R570	33K	NC
R600	0	NC
R601	NC	0
R604	NC	0
R605	0	15K
C39	5PF	2PF
C97	47/6.3	
C98	1000PF	NC
C99	220PF	NC
C100	10PF	NC
C106	1000PF	NC
C107	10PF	NC
C239	0.1μF	NC
C304	NC	15PF
VR3	4.7K	NC
VR11	47K	NC
VR12	47K	NC
VR14	2.2K	NC

D



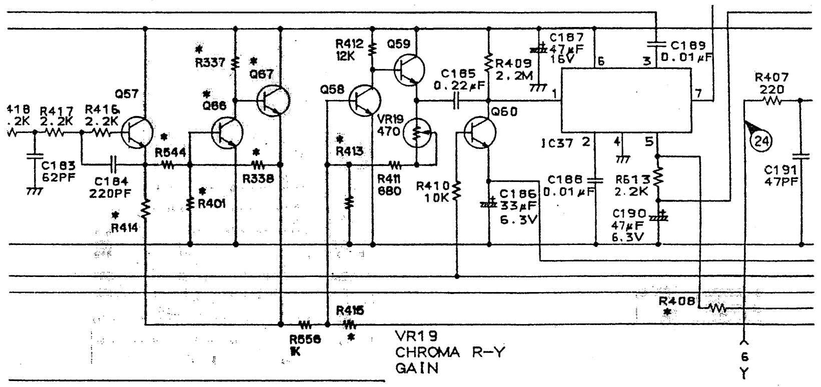
R255 3.3K
Q44
Q43
R257 47K
C155 33μF 6.3V
C156 33μF 6.3V
IC42
Q45
R254 1.5K
R256 100
C153 10μF 16V
+3V
C154 0.1μF
R259 33K
R260 4.7K
C157 10μF 16V
C308 10μF 16V
R258 4.7K
IC30 (a)
30
12

E



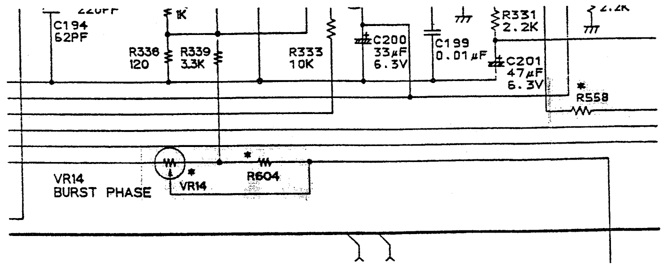
IC4
BSC
VSS1
VDD1
AL
ALX
AL1
ALC
FLM
VD
VS
VBL
VIS
VRS
HB1
VDD1
VSS1
HB2
C27 4.7μF 10V
C26 0.15μF
R28 220K
35
26 28 24 36 41
19
R297 0
SW1 (a) H.V BLANKING
+6.7V
C75 330μF 6.3V
Q21
C116
R298
R299
D8
R296
C76 NC
NOT USED
R85 330K
R512 3.3K
C73 0.1μF
C306 1000PF
R86 220K
49

F



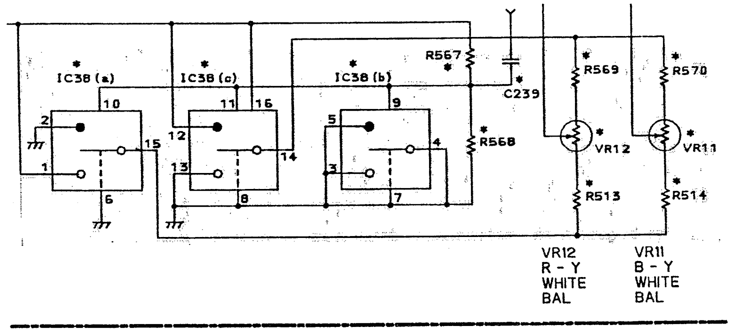
R418 2K
R417 2.2K
R416 2.2K
Q57
R337
Q67
Q66
R412 12K
Q59
R409 2.2M
C187 47μF 16V
C189 0.01μF
R407 220
C183 62PF
C184 220PF
R544
R401
R338
Q58
VR19 470
C185 0.22μF
Q60
IC37
R413
R411 680
R410 10K
C186 33μF 6.3V
C188 0.01μF
R513 2.2K
C190 47μF 6.3V
C191 47PF
R414
R415
R558 1K
R408
VR19 CHROMA R-Y GAIN
6 Y

G



C194 62PF
1K
R336 120
R339 3.3K
R333 10K
C200 33μF 6.3V
C199 0.01μF
R331 2.2K
C201 47μF 6.3V
R558
VR14 BURST PHASE
VR14
R604

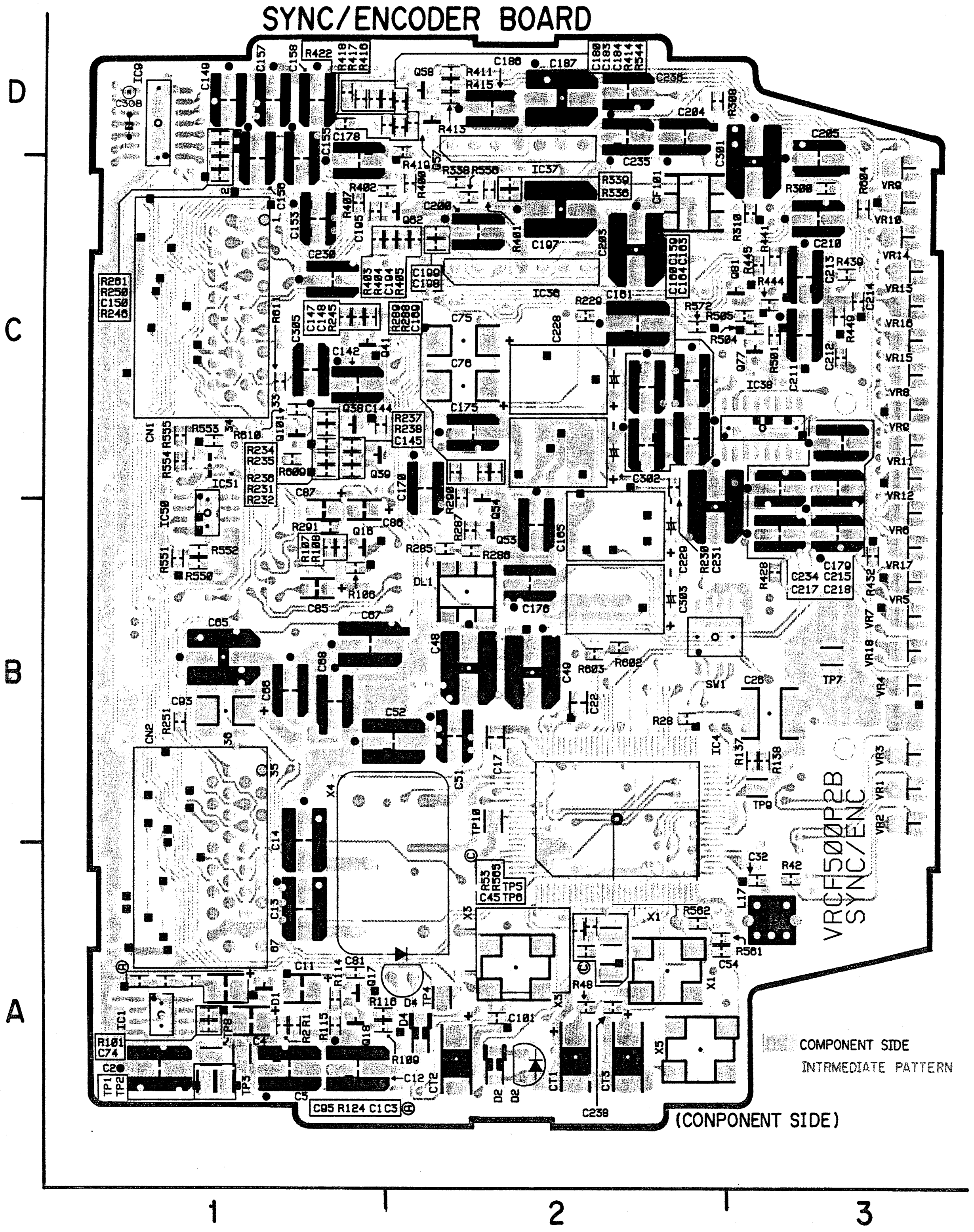
H

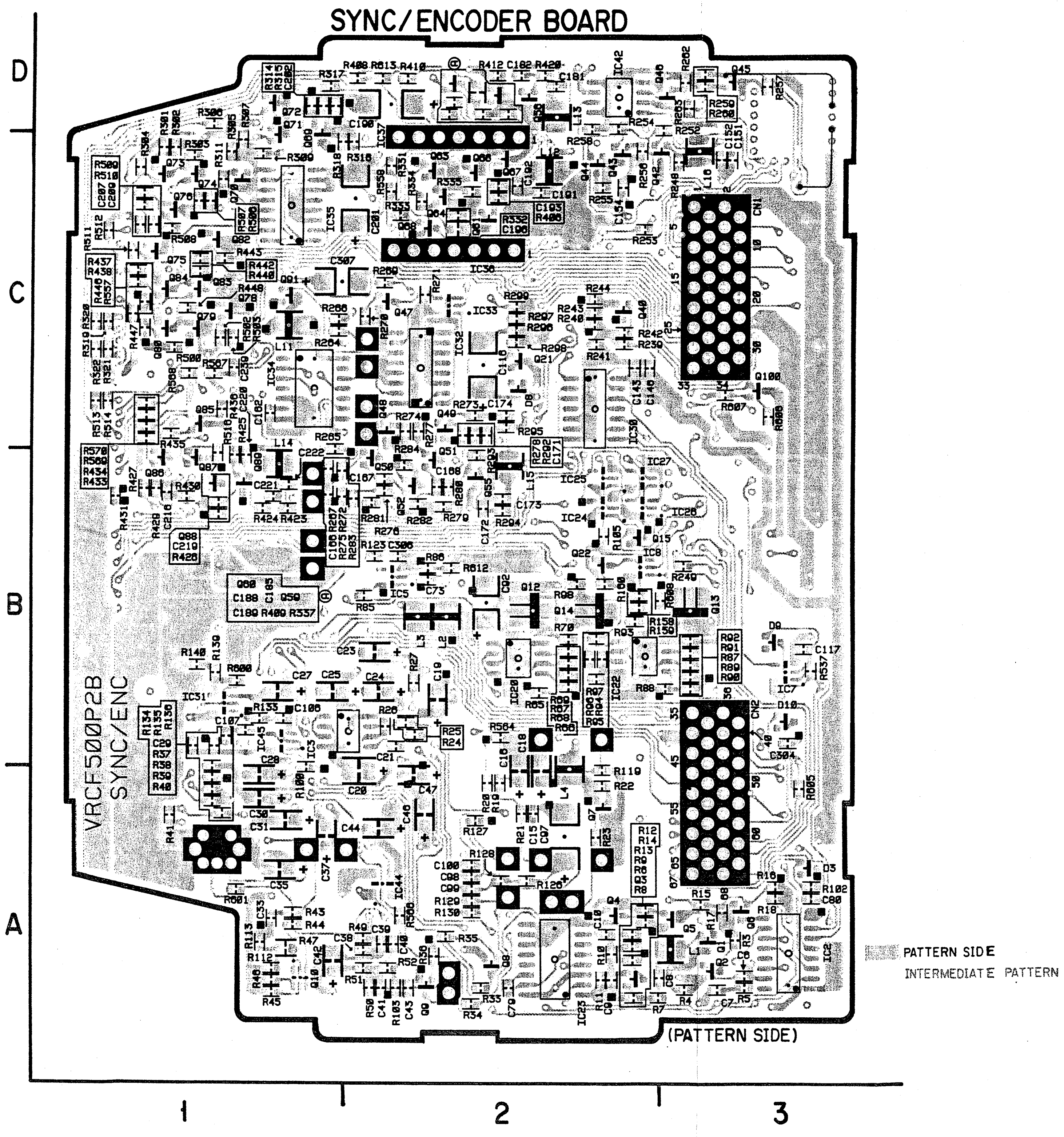


IC38 (a)
IC38 (c)
IC38 (b)
R567
C239
R569
R570
R568
VR12
VR11
R513
R514
VR12 R - Y WHITE BAL
VR11 B - Y WHITE BAL

	PAL	NTSC
IC31	NC	TC7SU04FR
IC38	μPD4063	NC
IC44	TC4S66FR	NC
IC45	TC7S32FR	NC
Q66	2SD1819	NC
Q67	2SD1819	NC
D4.	FC54M5	NC
D10	NC	MA141KTW
X1	SMX177VCO A	SMX143VCOA
X3	SMX140VCO A	NC
X4	VCO140A	VCO920B
X5	SMX177INTA	SMX143INTA
CT2	CDX20APS	NC
L17	EIC5EB005A	NC
CF101	ELB4A518	ELB4A513
TP10	RCT2125TPV	NC

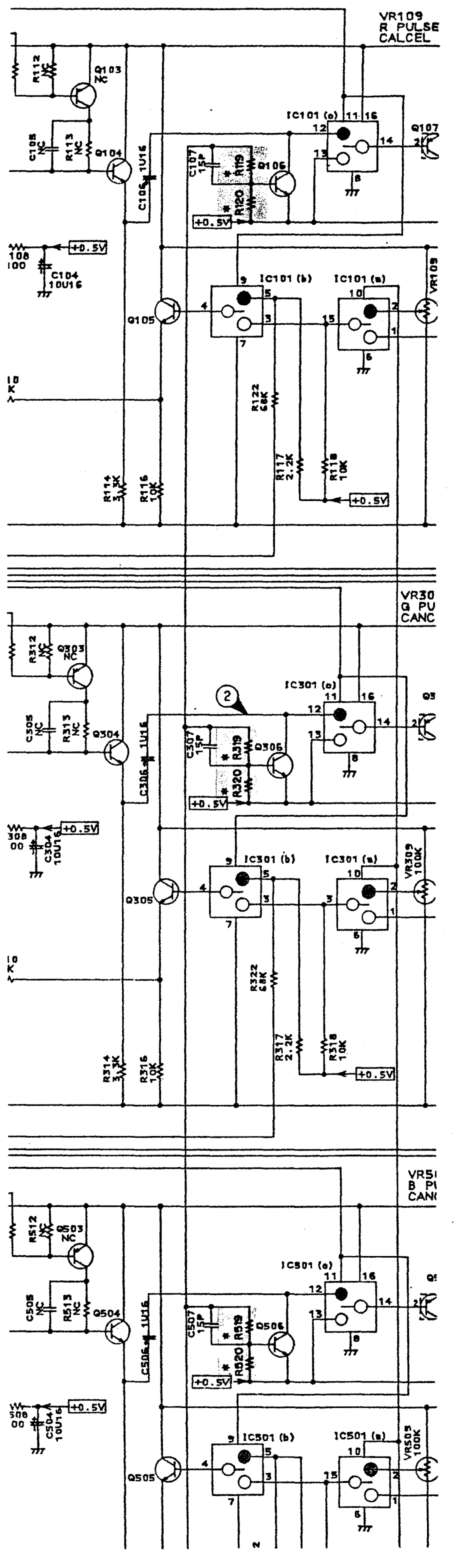
CONDUCTOR VIEW OF Sync/Encoder BOARD


SYNC/ENCODER BOARD
D
C
B
A
1
2
3
VRCF500P2B SYNC/ENC
COMPONENT SIDE
INTRMEDIATE PATTERN
(CONPONENT SIDE)
CN1
CN2
IC37
IC36
IC38
IC4
X1
X2
X3
X4
X5
TP7
TP8
TP10
SW1
DL1

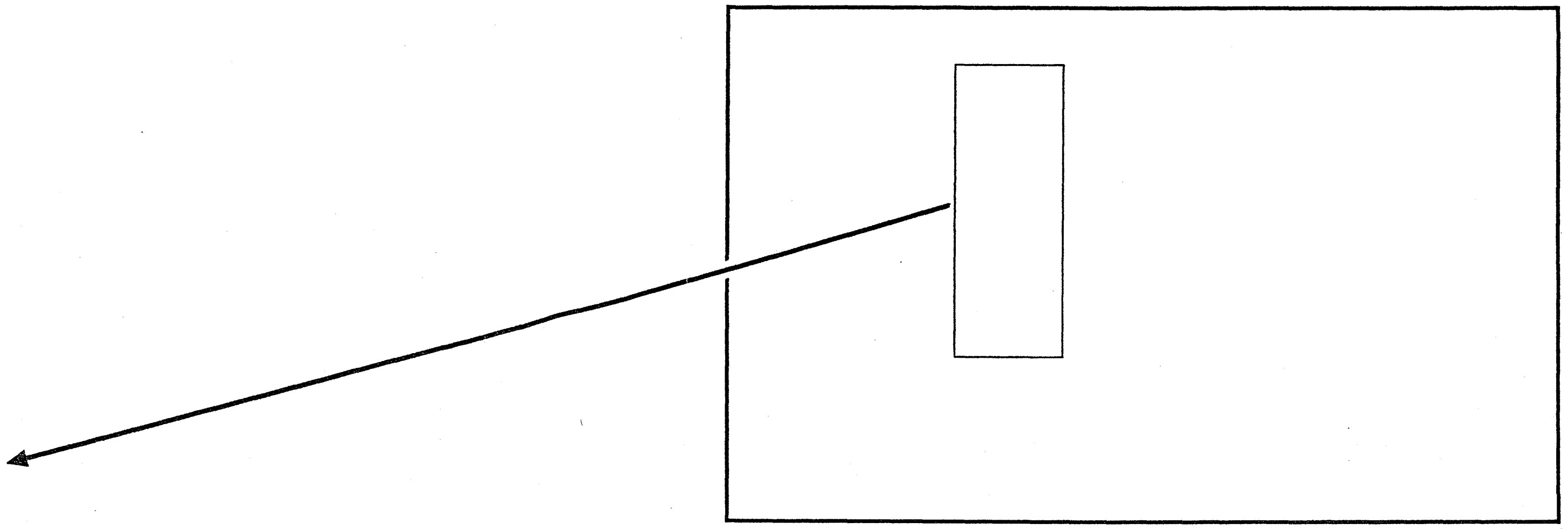

SYNC/ENCODER BOARD
D
C
B
A
1
2
3
VRCF500P2B SYNC/ENC
PATTERN SIDE
INTERMEDIATE PATTERN
(PATTERN SIDE)
CN1
CN2
IC36
IC33
IC35
IC37
IC42

SCHEMATIC DIAGRAM OF PREPROCESS BOARD

Shcematic diagram of the Preprocess Board have been corrected.


VR109
R PULSE
CALCEL
IC101 (a)
IC101 (b)
Q103
Q104
Q105
Q106
Q107
R112
R113
R119
R120
R122 68K
R117 2.2K
R118 10K
R114 3.3K
R116 10K
+0.5V
VR30
IC301 (a)
IC301 (b)
Q303
Q304
Q305
Q306
R312
R313
R319
R320
R322 68K
R317 2.2K
R318 10K
R314 3.3K
R316 10K
②
VR309 100K
IC501 (a)
IC501 (b)
Q503
Q504
Q505
Q506
R512
R513
R519
R520
VR509 100K

PREPROCESS BOARD



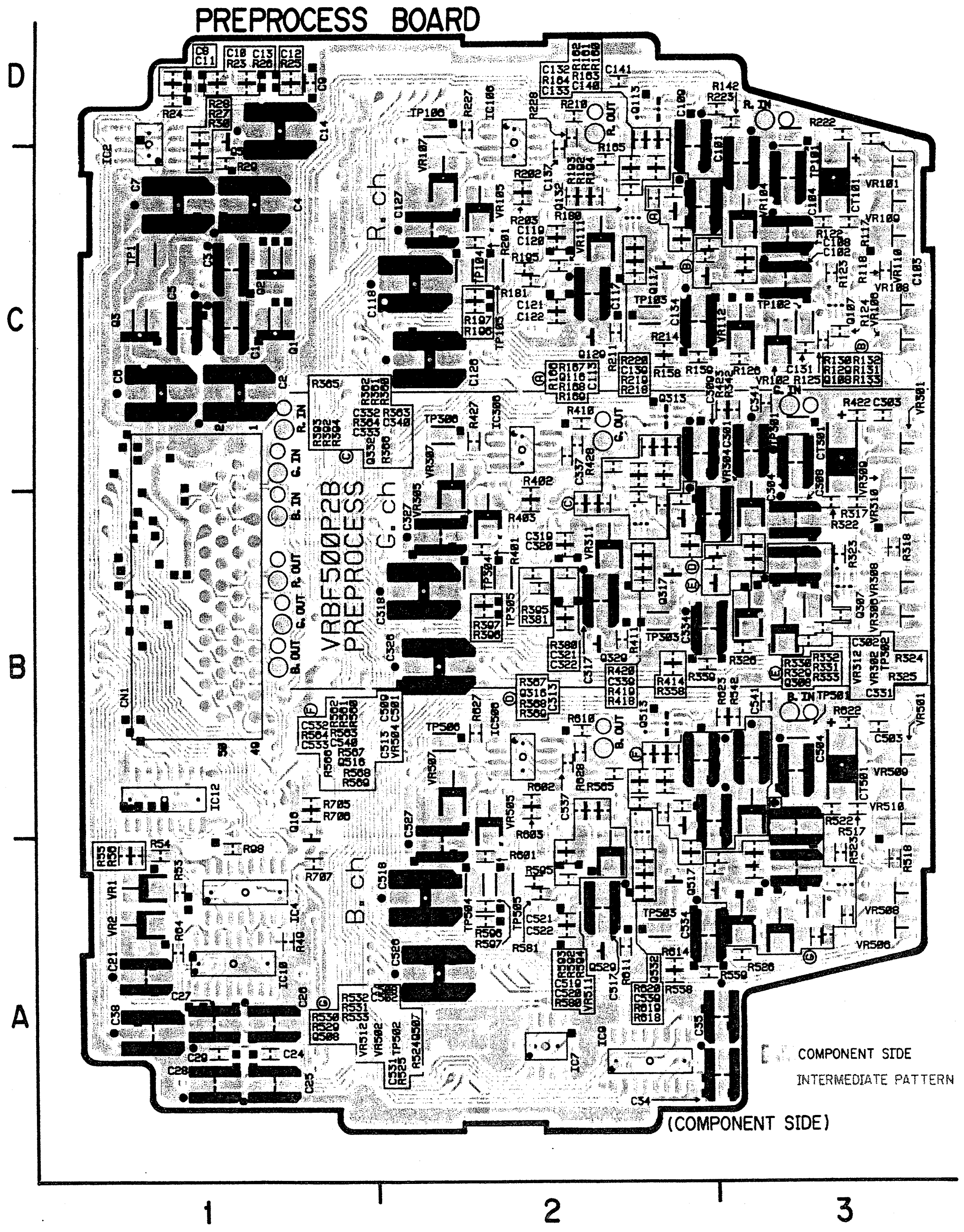
1. R119, R319, and R519 have been changed.
2. R120, R320, and R520 have been deleted.

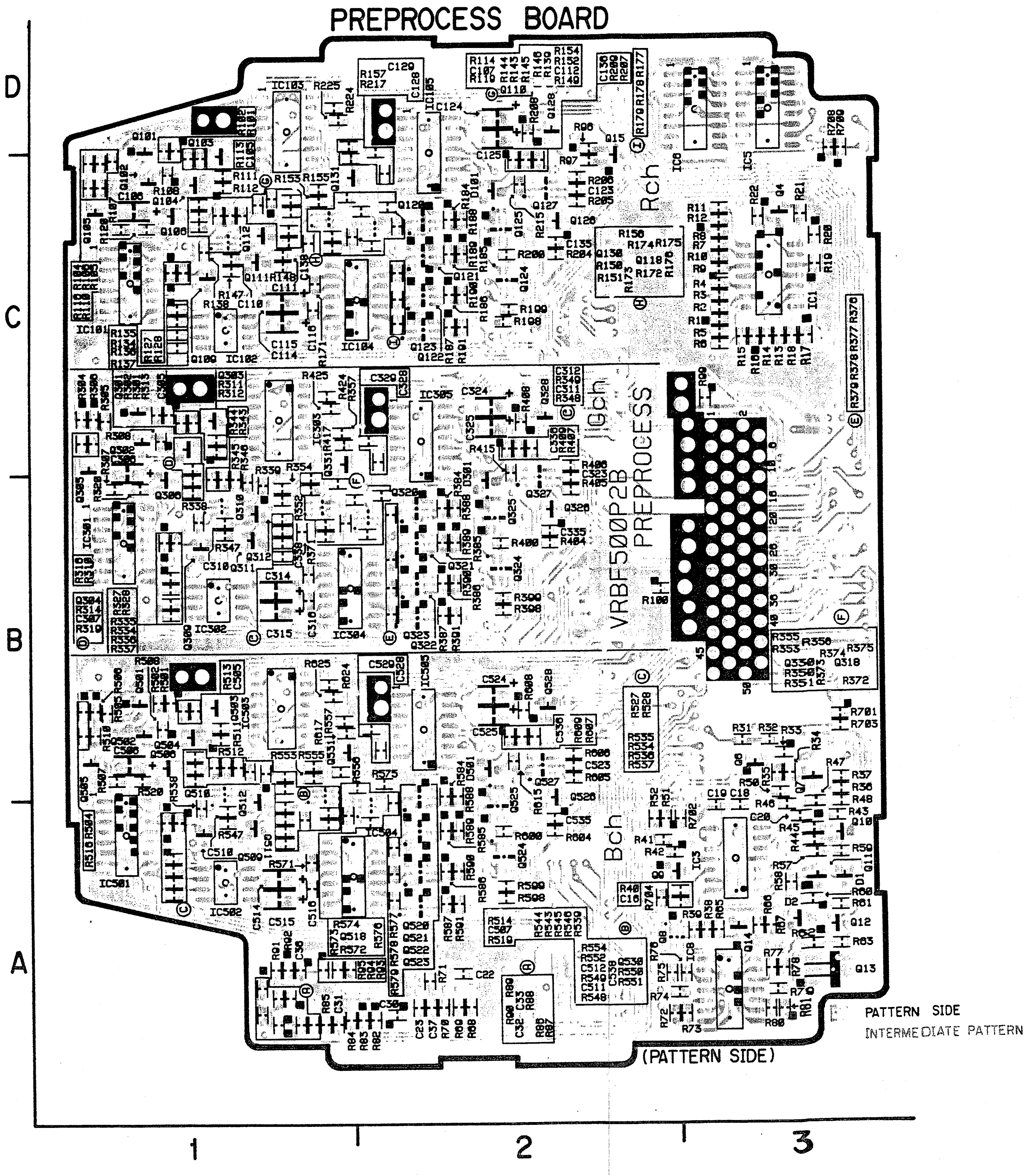
*

	PAL	NTSC
R119, R319, R519	10K	22K
R120, R320, R520	NC	10K

CONDUCTOR VIEW OF PREPROCESS BOARD

Conductor View of the Preprocess Board have been corrected.

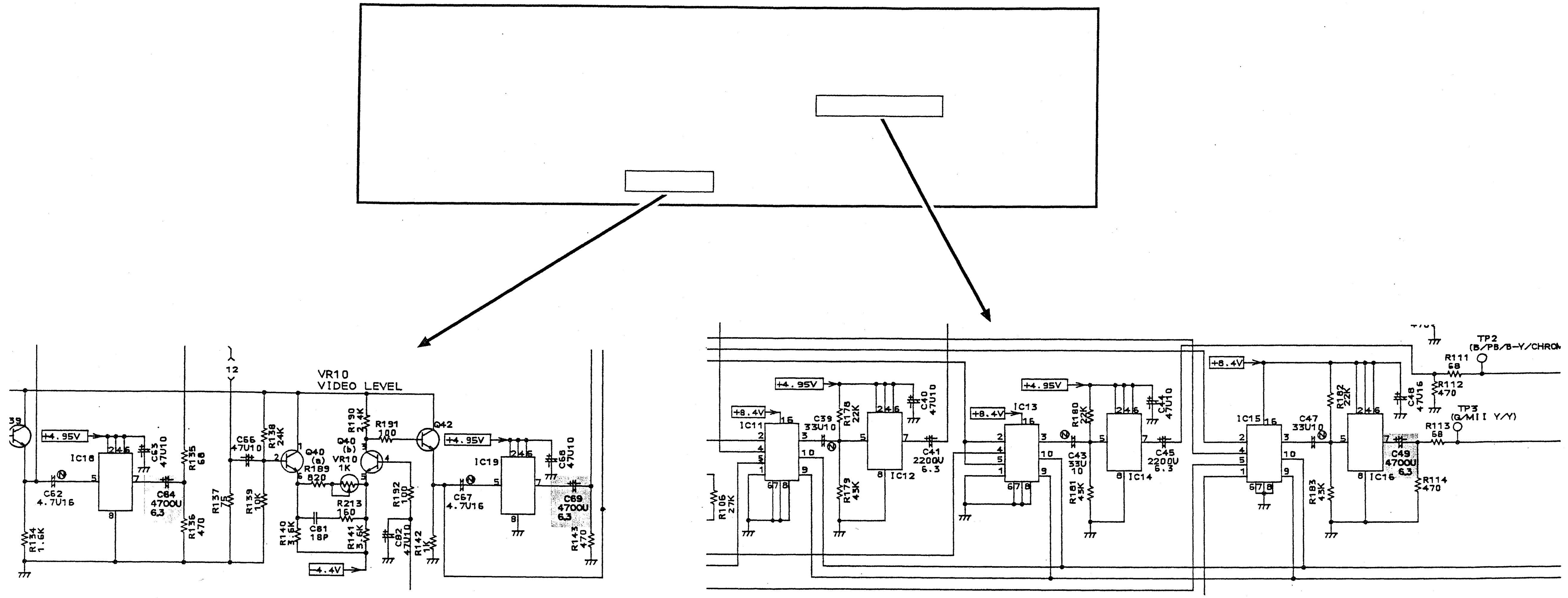

PREPROCESS BOARD
D
C
B
A
1
2
3
VRBF500P2B
PREPROCESS
R.ch
G.ch
B.ch
COMPONENT SIDE
INTERMEDIATE PATTERN
(COMPONENT SIDE)


PREPROCESS BOARD
D
C
B
A
1
2
3
VRBF500P2B
PREPROCESS
Rch
Gch
Bch
PATTERN SIDE
INTERMEDIATE PATTERN
(PATTERN SIDE)

SCHEMATIC DIAGRAM OF VIDEO BOARD

Shcematic diagram of the Video Board have been corrected.

VIDEO BOARD

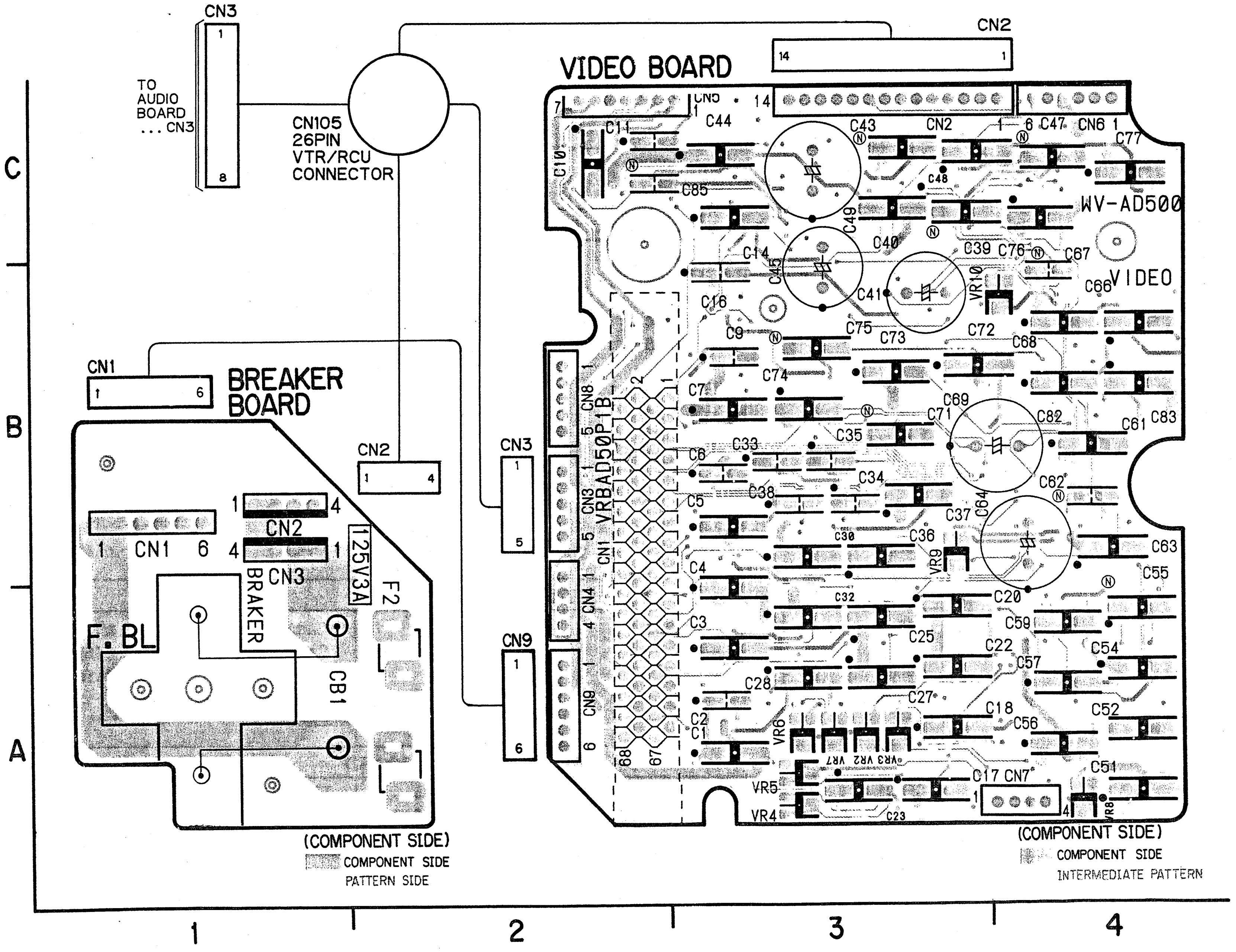


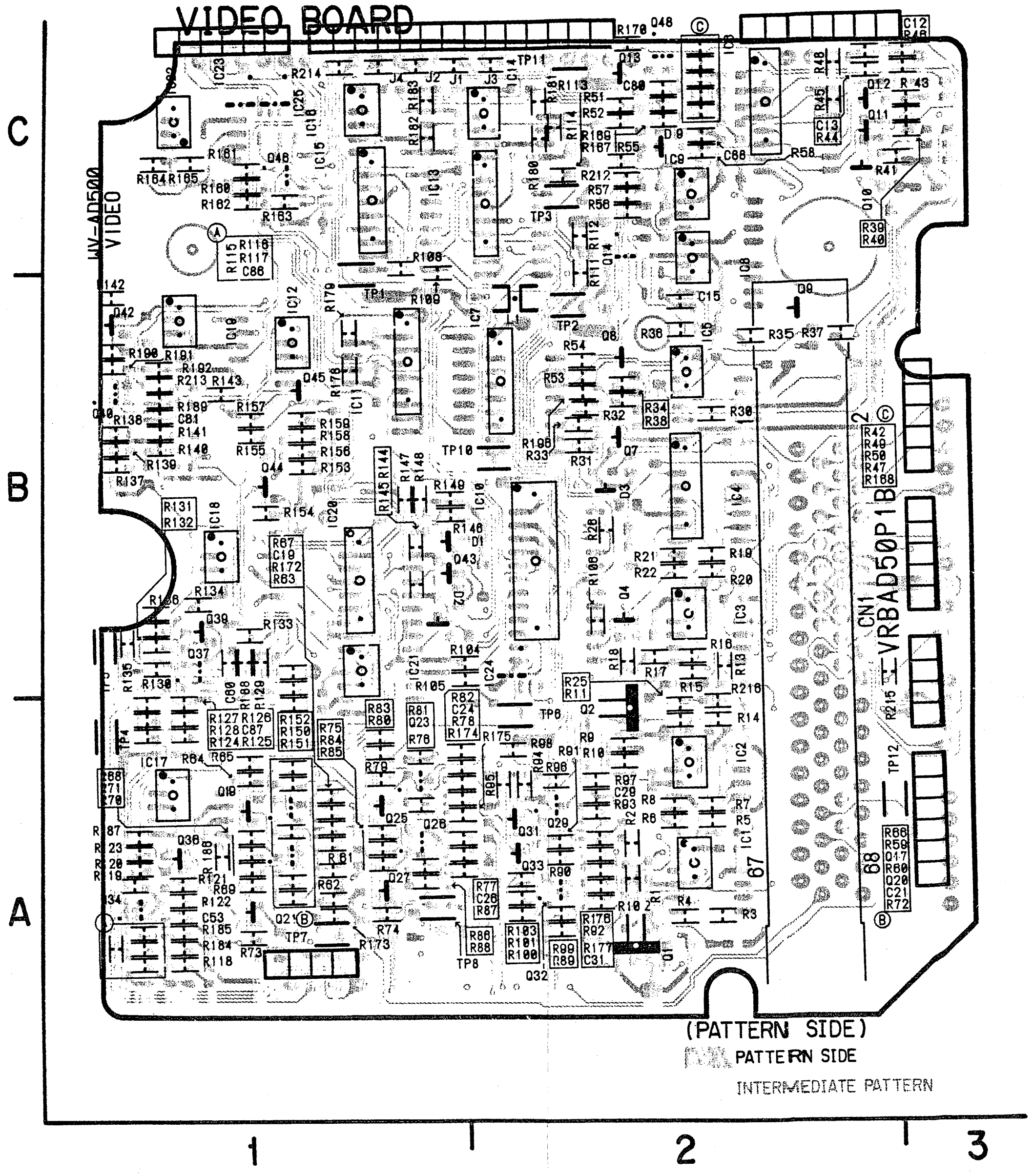
39
+4.95V
IC18
C63 47U10
R135 68
C62 4.7U16
C64 4700U 6.3
R134 1.6K
R136 470
12
R137 75
R139 10K
C66 47U10
R138 24K
VR10 VIDEO LEVEL
Q40 (a)
R189 820
Q40 (b)
VR10 1K
R190 3.4K
R191 100
R213 160
C81 18P
R140 3.6K
R141 3.6K
-4.4V
C82 47U10
R192 100
R142 1K
Q42
+4.95V
IC19
C68 47U10
C67 4.7U16
C69 4700U 6.3
R143 470
+8.4V
IC11
+4.95V
C39 33U10
R178 22K
R179 43K
IC12
C40 47U10
C41 2200U 6.3
R106 27K
IC13
+4.95V
R180 22K
C43 33U 10
R181 43K
IC14
C44 47U10
C45 2200U 6.3
+8.4V
IC15
C47 33U10
R182 22K
R183 43K
IC16
C48 47U16
C49 4700U 6.3
TP2 (B/PB/B-Y/CHRO
R111 68
R112 470
TP3 (G/MII Y/Y)
R113 68
R114 470

1. C49, C62, and C69 have been changed.

CONDUCTOR VIEW OF VIDEO BOARD

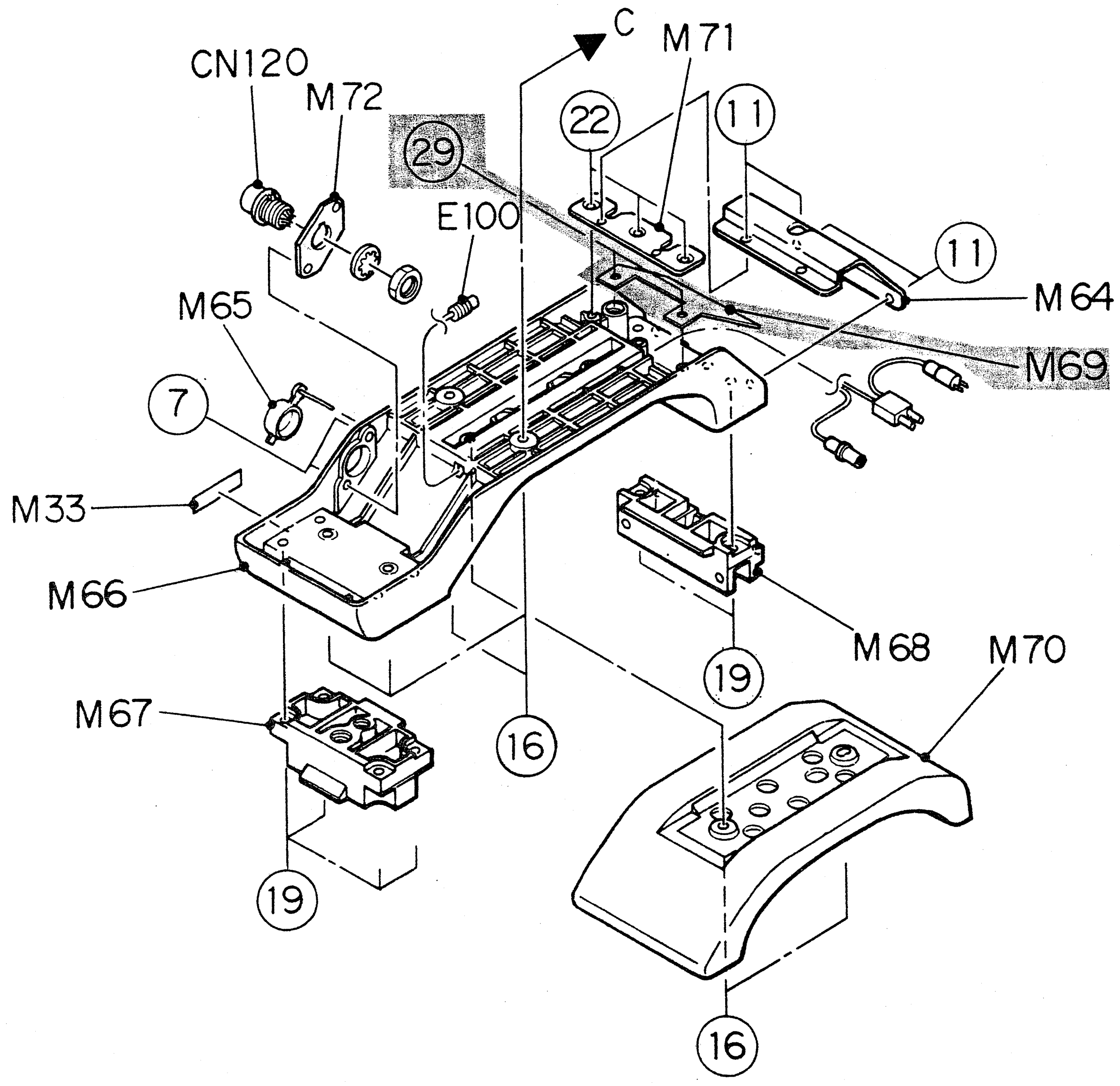
Conductor of the Video Board have been corrected.


CN3
TO AUDIO BOARD ... CN3
CN105 26PIN VTR/RCU CONNECTOR
CN2
VIDEO BOARD
WV-AD500
VIDEO
VRBAD50P1B
CN1
BREAKER BOARD
CN2
CN3
CN9
F.BL
CB1
F2
125V3A
BRAKER
C
B
A
1
2
3
4
(COMPONENT SIDE)
COMPONENT SIDE
PATTERN SIDE
(COMPONENT SIDE)
COMPONENT SIDE
INTERMEDIATE PATTERN


VIDEO BOARD
WV-AD500 VIDEO
CN1 VRBAD50P1B
C
B
A
1
2
3
(PATTERN SIDE)
PATTERN SIDE
INTERMEDIATE PATTERN

EXPLODED VIEW

Exploded view have been corrected.



1. M69 and ㉙ have been added.

REPLACEMENT PARTS LIST

Important Notice

1. Components identified by "⚠" mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
2. RTL : Retention Time Limited.

REF. NO.	ORIGINAL PART NO.	NEW PART NO.	DESCRIPTION
		MISCELLANEOUS	
M69	————	YWV5EA1289A3	Cover
		FILTER SENSOR BOARD	
R1, 2	YWR0816P331D	YWR0816P271D	Metal 270 Ω 1/16W
R3	YWR0816P331D	YWR0816P221D	Metal 220 Ω 1/16W
		DRIVE BOARD	
R40	YWR0816P222D	YWR0816P242D	Metal 2.4k Ω 1/16W
R44	ERJ3GEY0R00	YWR0816P472D	Metal 4.7k Ω 1/16W
		PREPROCESS BOARD	
R119	ERJ3GEYJ223	ERJ3GEYJ103	Carbon 10k Ω 1/16W
R120	ERJ3GEYJ103	————	
R224	ERJ3GEYJ114	YWR0816R753D	Metal 75k Ω 1/16W
R225	ERJ3GEYJ124	YWR0816R563D	Metal 56k Ω 1/16W
R319	ERJ3GEYJ223	ERJ3GEYJ103	Carbon 10k Ω 1/16W
R320	ERJ3GEYJ103	————	
R424	ERJ3GEYJ114	YWR0816R753D	Metal 75k Ω 1/16W
R425	ERJ3GEYJ124	YWR0816R563D	Metal 56k Ω 1/16W
R519	ERJ3GEYJ223	ERJ3GEYJ103	Carbon 10k Ω 1/16W
R520	ERJ3GEYJ103	————	
R624	ERJ3GEYJ114	YWR0816R753D	Metal 75k Ω 1/16W
R625	ERJ3GEYJ124	YWR0816R563D	Metal 56k Ω 1/16W
		SYNC/ENCODER BOARD	
R23	ERJ3GEYJ333	ERJ3GEYJ103	Carbon 10k Ω 1/16W
R34	————	ERJ3GEYJ101	Carbon 100 Ω 1/16W
R400	ERJ3GEY0R00	ERJ3GEYJ102	Carbon 1k Ω 1/16W
C144	YW5CH270J5VB	YW5CH390J5VB	Ceramic 39 pF
C308	————	ECEA1CSN100	Electrolytic 10 µF 16V
		DIGITAL PROCESS BOARD	
CF201, 301	HF55BHW35X45	HF55BWA35X45	Filter
CF401, 501	HF55BHW35X45	HF55BWA35X45	Filter
CF601	HF55BHW35X45	HF55BWA35X45	Filter
		SYSTEM CONTROL BOARD	
C52	YW5UJ180J5VB	YW5UJ220J5VB	Ceramic 22 pF

REF. NO.	ORIGINAL PART NO.	NEW PART NO.	DESCRIPTION	
VIDEO BOARD OF WV-AD500				
C41, 45	ECEA0JU222	ECA0JM222	Electrolytic	2,200 µF 6.3V
C49	ECA0JM332	ECA0JM472	Electrolytic	4,700 µF 6.3V
C64, 69	ECEA0JU332	ECA0JM472	Electrolytic	4,700 µF 6.3V

Printed in Japan
C-380 Ⓝ 12, 23

ORDER NO. AVS9307732S8

Service Manual

Colour Video Camera

WV-F500E Series

Vol. 2

Adjustment Procedures

Supplement-2

Please file and use this supplement service manual together with the service manual for the Model NO. WV-F500E Series, order No. AVS9301642C8 and AVS9305702S8.

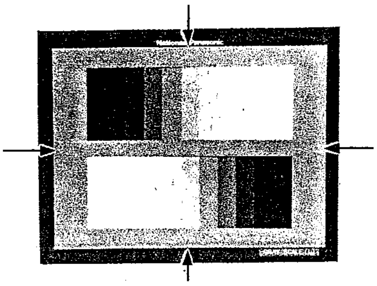
ADJUSTMENT PROCEDURES

- Adjustment procedures have been corrected.

Panasonic

4-2 Camera adjustment

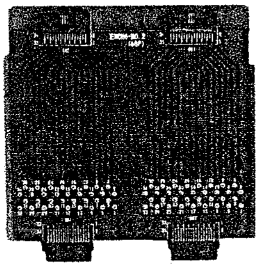
- Refer to the location of test points and Adjusting Controls.
- Aim the camera at the test chart so that the arrow heads on the test chart just touch to the four edges of the raster on the underscanned video monitor.



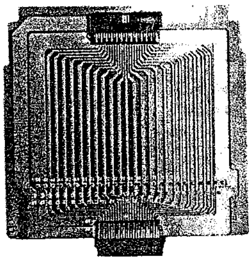
Extension board

- When adjusting the Preprocess board, Sync/Encoder board , System Control board, Digital/Process board and Power board, use the following extension board.

(YWV0FA0258AN)

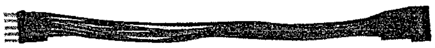


(YWV0EA0229AN)

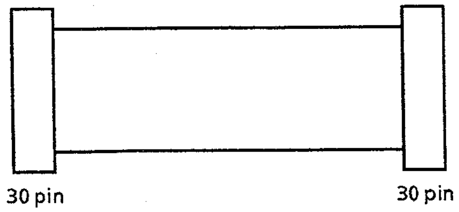


Extension cable

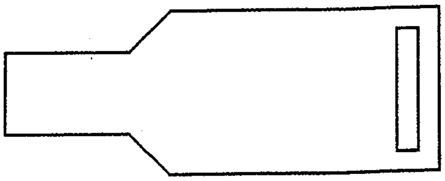
- When adjusting the Drive board, use the following extension cables.
  (YWF250ENCH01)



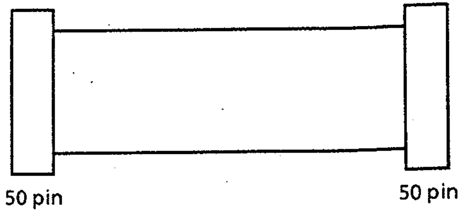
Extension Cable for Syscon Board and Digital/Process board.
(YWV0EA0231AN) (2 pieces)



Flexible board for head optical assy.
(YWV0EA0230AN)



Extension cable for Digital Process board.
(YWV0EA0232AN)



Power board Adjustment

(1) SAWTOOTH adjustment

Test point :	**TP1 (GROUND)**	**Power board**
	TP4 (SAWTOOTH)	**Power board**
Adjust :	**VR2 (SAWTOOTH LEVEL)**	**Power board**

- Connect the Oscilloscope to TP4 (SAWTOOTH) on the Power board.
- Adjust VR2 (SAWTOOTH LEVEL) so that the Signal level is 0.6V ± 0.01V.

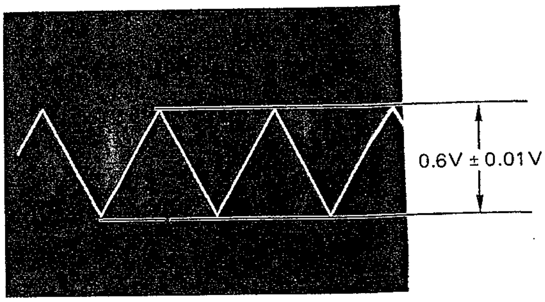


Fig. 4-2-1

(2) PD adjustment

Test point :	**TP1 (GROUND)**	**Power board**
	TP3 (PD)	**Power board**
Adjust :	**CT1 (PD ADJ)**	**Power board**

- Connect the Digital voltmeter to TP3 (PD) on the Power board.
- Adjust CT1 (PD ADJ) for 3.5V ± 0.1V.

(3) Vo adjustment

Test point :	**TP1 (GROUND)**	**Power board**
	TP5 (+4.95V)	**Power board**
Adjust :	**VR1 (Vo ADJ)**	**Power board**

- Connect the Digital voltmeter to TP5 (+4.95V) on the Power board.
- Adjust VR1 (Vo ADJ) for 4.95V ± 0.05V.

(4) Internal subcarrier adjustment

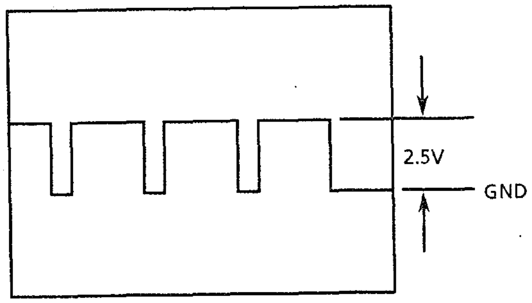
Test point :	**TP9 (SC)**	**Sync/Encoder board**
Adjust :	**CT3 (INT)**	**Sync/Encoder board**

- Connect the Frequency counter to TP9 (SC) on the Sync/Encoder board.
- Adjust CT3 (INT) for 4.43361875 MHz ± 5 Hz.

(5) Interleaving adjustment

Test point :	**TP10 (INTERLEAVING)**	**Sync/Encoder board**
Adjust :	**CT2 (INTERLEAVING)**	**Sync/Encoder board**

- Connect the oscilloscope to TP10 (INTERLEAVING) on the Sync/Encoder board.
- Adjust CT2 (INTERLEAVING) so that the signal level becomes 2.5V.



(6) R-Y/B-Y carrier balance adjustment

Test point :	**Video Output Connector of Camera Adaptor**	
Adjust :	**VR8 (B-Y CARRIER BAL.)**	**Sync/Encoder board**
	VR9 (R-Y CARRIER BAL.)	**Sync/Encoder board**
	VR11 (B-Y WHITE BAL.)	**Sync/Encoder board**
	VR12 (R-Y WHITE BAL.)	**Sync/Encoder board**
Observe :	**Vectroscope**	

- Set the Color Bar/+6 dB/Camera Selection Switch on the right side of the camera to BAR position.
- Increase the input gain of the vectorscope.
- Adjust VR8 (B-Y CARRIER BAL.), VR9 (R-Y CARRIER BAL.), VR11 (B-Y WHITE BAL.) and VR12 (R-Y WHITE BAL.) alternately so that the center point is positioned at center of the vectorscope.

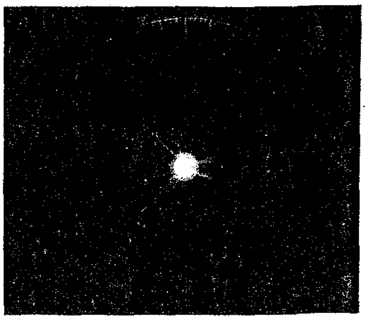


Fig.4-2-2

(7) Y gain and sync gain adjustment

Test point :	**28 Pin(Upper side)**	**Extension board**
Adjust :	**VR7 (Y GAIN)**	**Sync/Encoder board**
	VR18 (SYNC GAIN)	**Sync/Encoder board**

- Connect the oscilloscope to 28 pin on the Extension board.
- Adjust VR7 (Y GAIN) so that the Y signal becomes 0.7 Vp-p.
- Adjust VR18 (SYNC GAIN) so that the Sync signal becomes 0.3 Vp-p.

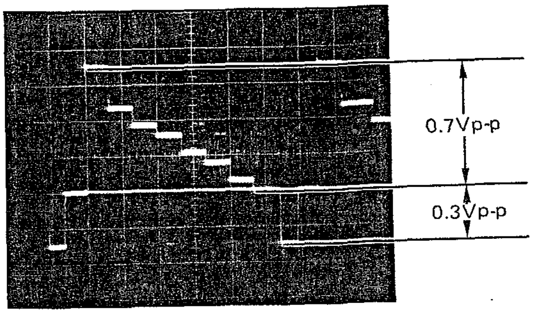


Fig. 4-2-3

(8) SC GAIN adjustment

Test point :	**29 Pin (Upper side)**	**Extension board**
Adjust :	**VR10 (SC GAIN)**	**Sync/Encoder board**

- Connect the oscilloscope to 29 pin on the Extension board.

- Adjust VR10 (SC GAIN) so that the Burst signal becomes 0.3 Vp-p.

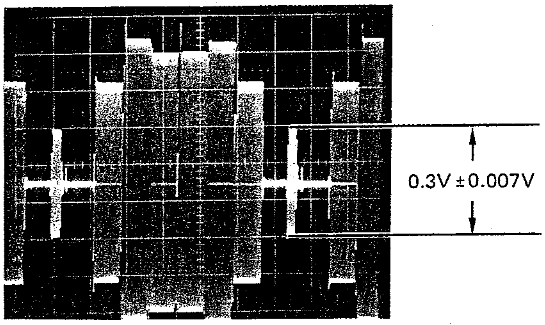


Fig. 4-2-4

(9) MII-Y GAIN, SYNC GAIN adjustment

Test point:	**22 Pin (Upper side)**	**Extension board**
Adjust:	**VR17 (MII-Y GAIN)**	**Sync/Encoder board**
	VR4 (MII SYNC GAIN)	**Sync/Encoder board**

- Connect the oscilloscope to 22 pin on the Extension board.
- Adjust VR17 (M II-Y GAIN) so that the Y signal becomes 0.7 Vp-p.
- Adjust VR4 (M II SYNC GAIN) so that the sync signal becomes 0.3 Vp-p.

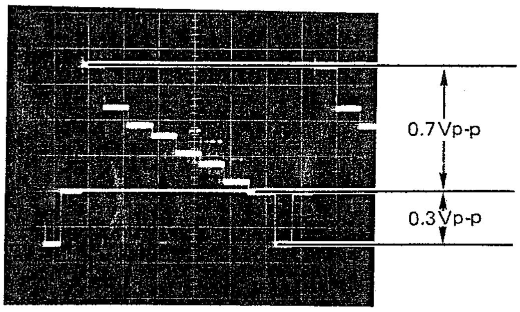


Fig. 4-2-5

(10) R-Y, B-Y Output GAIN adjustment

Test point:	**24 pin (R-Y) (Upper side)**	**Extension board**
	25 pin (B-Y) (Upper side)	**Extension board**
Adjust:	**VR16 (R-Y OUT)**	**Sync/Encoder board**
	VR15 (B-Y OUT)	**Sync/Encoder board**

- Connect the oscilloscope to 24 pin on the Extension board.
- Adjust VR16 (R-Y OUT) so that the R-Y signal becomes 0.525 Vp-p.

.525 Vp-p.

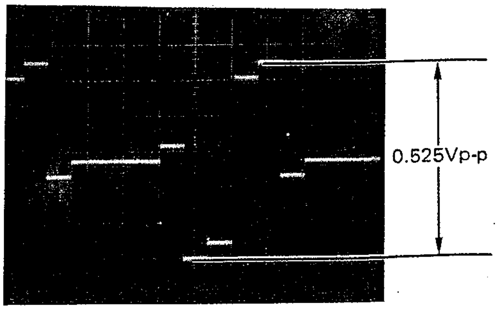


Fig. 4-2-6

- Connect the oscilloscope to 25 pin on the Extension board.
- Adjust VR15 (B-Y OUT) so that the B-Y signal becomes 0.525 Vp-p.

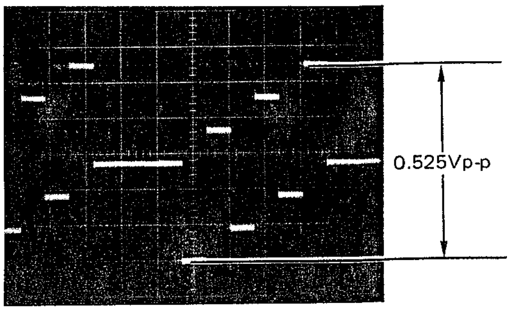


Fig. 4-2-7

(11) Colour bar adjustment

Adjust:	**VR1 (SC-H)**	**Sync/Encoder board**
	VR2 (QUAD)	**Sync/Encoder board**
	VR3 (SUB QUAD)	**Sync/Encoder board**
	VR19 (CHROMA R-Y GAIN)	**Sync/Encoder board**
	VR5 (VIDEO OUTPUT GAIN)	**Sync/Encoder board**
	VR6 (CHROMA GAIN)	**Sync/Encoder board**
	VR14 (BURST PHASE)	**Sync/Encoder board**
	VR18 (SYNC GAIN)	**Sync/Encoder board**
	VR13 (BURST GAIN)	**Sync/Encoder board**
Observe:	**Vectorscope**	
	Waveform monitor	

- Confirm that the Color Bar / +6 dB / Camera Selection Switch on the right side of the Camera to Bar position.
- Set the vectorscope to VECT+SC-H mode.
- Adjust VR1 (SC-H) so that the SC/H spot on the vectorscope is on the 180° ± 5° axis. (Fig. 4-2-8)

- Adjust VR14 (BURST PHASE) so that the burst vectors position becomes 90° ± 1° on the vectorscope.

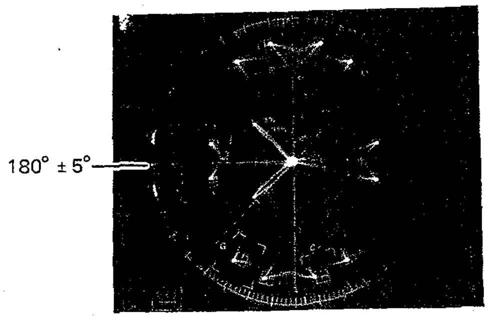


Fig. 4-2-8

- Adjust VR13 (BURST GAIN) on the Sync/Encoder board so that the burst signal level becomes 0.3 Vp-p. (Fig. 4-2-9)
- Adjust VR18 (SYNC GAIN) on the Sync/Encoder board so that the Sync signal becomes 0.3 Vp-p.
- Adjust VR5 (VIDEO OUTPUT GAIN) on the Sync/Encoder

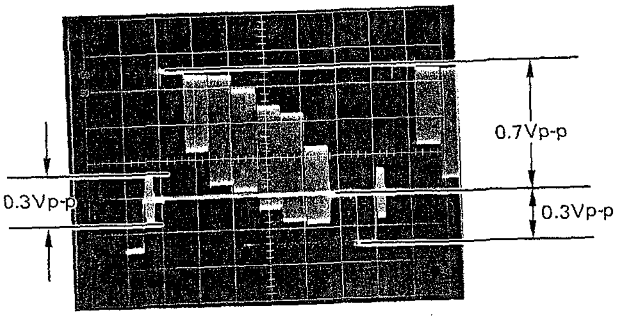


Fig. 4-2-9

- Adjust VR2 (QUAD), VR3 (SUB QUAD), VR19 (CHROMA R-Y GAIN), and VR6 (CHROMA GAIN) on the Sync/Encoder board so that all vectors fall into their respective boxes.

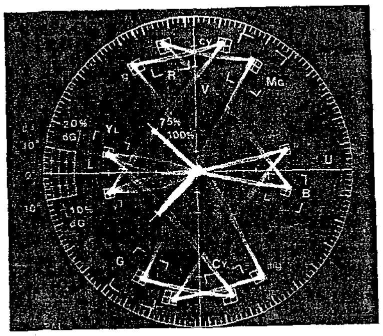
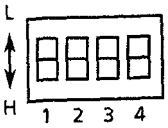


Fig. 4-2-10

(12) H. V Blanking (confirmation)



H Blanking width : 12.0 µsec
V Blanking width : 25H

1	2	H Blanking width
L	L	11.8 µsec
H	L	11.9 µsec
H	H	12.0 µsec
L	H	12.1 µsec

3	4	V Blanking width
L	L	23H
H	L	24H
H	H	25H
L	H	26H

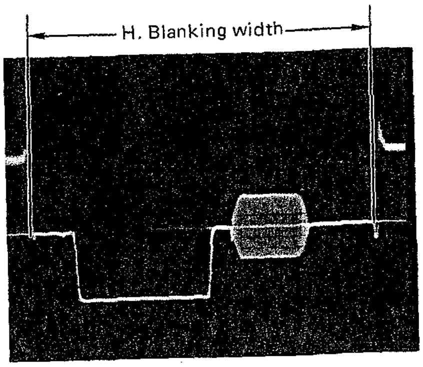


Fig. 4-2-11

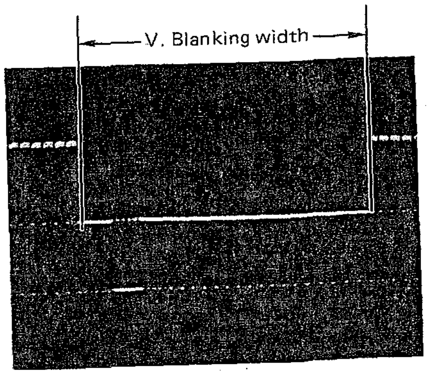


Fig. 4-2-12

(13) SC Lock adjustment

Test point :	TP6 (SC LOCK)	Sync/Encoder board
Adjust :	L17 (SC LOCK-1)	Sync/Encoder board
	CT1 (SC LOCK-2)	Sync/Encoder board

- Supply the Black Burst signal or Color Bar signal to the Gen-Lock input connector of the camera from T.S.G or S.E.G.
- Connect the oscilloscope to TP6 (SC LOCK) of the Sync/Encoder board.
- Set the oscilloscope to DC mode.
- Adjust L17 (SC LOCK-1) so that the DC level becomes maximum.

- Adjust CT1 (SC LOCK-2) so that the DC level of TP6 is 2.3V ± 0.1V.

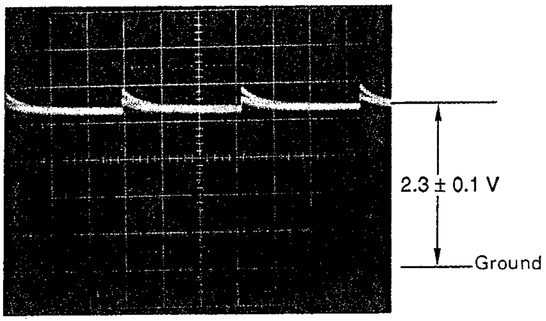


Fig. 4-2-13

- Disconnect the Black burst signal or colour bar signal from Gen-Lock input connector.

(14) 14 MHz, 28 MHz phase adjustment

Test point : **TP6 (14 MHz-2) Digital/Process board**
TP7 (28 MHz-2) Digital/Process board
TP9 (4FSC) Digital/Process board
TP10 (8FSC) Digital/Process board
Adjust : **CT1 (14 MHz PHASE-1) Digital/Process board**
CT2 (14 MHz PHASE-2) Digital/Process board
CT3 (28 MHz PHASE) Digital/Process board

- Connect the oscilloscope CH1 to TP10 (8FSC) and CH2 to TP9 (4FSC).
- Adjust CT1 (14 MHz PHASE-1) so that the rise edge phase of 4FSC clock pulse at TP9 from rise edge of 8FSC clock Pulse at TP10 becomes 5 nsec ± 1 nsec delay.
- Connect the Oscilloscope CH1 to TP7 (28 MHz-2).
- Adjust CT3 (28 MHz PHASE) so that the rise edge phase of 28 MHz clock pulse at TP7 from rise edge phase at TP7 from rise edge of 4FSC clock pulse at TP9 becomes 3 nsec ± 1 nsec delay.
- Connect the Oscilloscope CH2 to TP6 (14 MHz-2).
- Adjust CT2 (14 MHz PHASE-2) so that the rise edge phase of 14 MHz clock pulse at TP6 from rise edge of 28 MHz clock pulse at TP7 becomes 5 nsec ± 1 nsec delay.

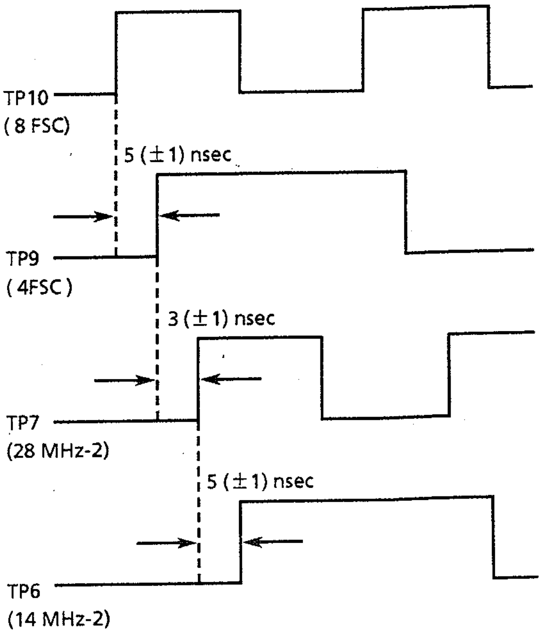


Fig. 4-2-14

<note>
High reliability type probe is required for this adjustment.

(15) Corner Gate Pulse adjustment

Test point : **TP4 (VD) Mother board**
TP13 (CORNER GATE PULSE) Digital Process board
Adjust : **VR3 (CORNER GATE PULSE-1) Digital Process board**
VR4 (CORNER GATE PULSE-2) Digital Process board

- Connect the CH1 of the Oscilloscope to TP4 (VD) on the Mother board.
- Connect CH2 of the Oscilloscope to TP13 (CORNER GATE PULSE) on the Digital process board.
- Adjust VR3 (CORNER GATE PULSE-1) so that the Falling edge phase of the Corner Gate Pulse from rise edge of VD pulse at TP4 (VD) on the Mother board becomes 6 msec delay.
- Adjust VR4 (CORNER GATE PULSE-2) so that the Width of the Corner Gate Pulse becomes 6 msec.

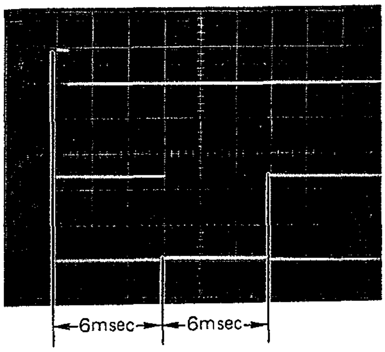


Fig. 4-2-15

(16) V sub adjustment

Test point :	**TP4 (R Vsub)**	**Drive board**
	TP5 (G Vsub)	**Drive board**
	TP6 (B Vsub)	**Drive board**
Adjust :	**VR4 (R Vsub)**	**Drive board**
	VR5 (G Vsub)	**Drive board**
	VR6 (B Vsub)	**Drive board**

- Set the Colour Bar/+6 dB/Camera Selection Switch of the camera to the camera position.
- Confirm the Electric Shutter ON/OFF Switch is OFF position.
- Connect the Digital voltmeter to TP5 (G Vsub) on the Drive board.
- Adjust the VR5 (G Vsub) so that the Voltage at TP5 (G Vsub) is equal to the voltage that indicated by label on the Flexible board between the Drive board and Head Optical Assembly.
- Connect the Digital voltmeter to TP4 (R Vsub) on the Drive board.
- Adjust the VR4 (R Vsub) so that voltage at TP4 (R Vsub) is equal to the Voltage that indicated by label on the Flexible board between the Drive board and Head Optical Assembly.
- Connect the Digital voltmeter to TP6 (B Vsub) on the Drive board.
- Adjust the VR6 (B Vsub) so that the Voltage at TP6 (B Vsub) is equal to the voltage that indicated by label on the Flexible board between the Drive board and Head optical Assembly.

(17) VREG adjustment

Test point :	**TP101 (R IN)**	**Preamp board**
	TP201 (G IN)	**Preamp board**
	TP301 (B IN)	**Preamp board**
Adjust :	**VR1 (R VXRG)**	**Drive board**
	VR2 (G VXRG)	**Drive board**
	VR3 (B VXRG)	**Drive board**

- Connect the Drive board and Preamp board using with the Extension cable.
- Aim the camera at the Logarithmic gray scale chart.
- Set the Lens iris and lighting so that the Saturation of the CCD image sensor output.
- Connect the Oscilloscope to TP201 (G IN) on the Preamp board.
- Adjust VR2 (G VXRG) so that output of the CCD Image sensor becomes maximum .
- Connect the Oscilloscope to TP101 (R IN) on the Preamp board.
- Adjust VR1 (R VXRG) so that output of the CCD Image sensor becomes maximum.
- Connect the Oscilloscope to TP301 (B IN) on the Preamp board.
- Adjust VR3 (B VXRG) so that output of the CCD Image sensor becomes maximum.

(18) DC Bias adjustment

Test point :	**TP102 (R OUT)**	**Preamp board**
	TP202 (G OUT)	**Preamp board**
	TP302 (B OUT)	**Preamp board**
Adjust :	**VR101 (R DC BIAS)**	**Preamp board**
	VR201 (G DC BIAS)	**Preamp board**
	VR301 (B DC BIAS)	**Preamp board**

- Close the lens iris.
- Set the Oscilloscope to H rate and DC mode.
- Turn VR102 (R WHITE CLIP), VR202 (G WHITE CLIP) and VR302 (B WHITE CLIP) on the Preamp board to fully clockwise.
- Connect the Oscilloscope to TP202 (G OUT) on the Preamp board.
- Adjust VR201 (G DC BIAS) so that the DC level from ground level becomes 0.5V.
- Connect the oscilloscope to TP102 (R OUT) on the Preamp board.
- Adjust VR101 (R DC BIAS) so that the DC level from ground level becomes 0.5V.
- Connect the oscilloscope to TP302 (B OUT) on the Preamp board.
- Adjust VR301 (B DC BIAS) so that the DC level from ground level becomes 0.5V.

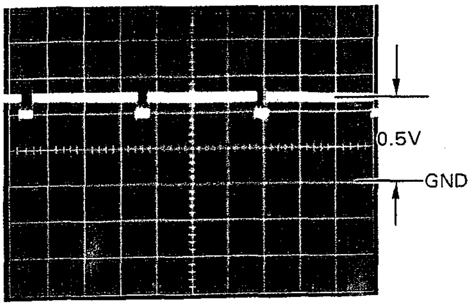


Fig.4-2-16

(19) White clip adjustment

Test point:	**TP102 (R OUT)**	**Preamp board**
	TP202 (G OUT)	**Preamp board**
	TP302 (B OUT)	**Preamp board**
Adjust:	**VR102 (R WHITE CLIP)**	**Preamp board**
	VR202 (G WHITE CLIP)	**Preamp board**
	VR302 (B WHITE CLIP)	**Preamp board**

- Aim the camera at the Logarithmic gray scale chart (lighting is 2000 lux, 3200°K).
- Connect CH1 of the Oscilloscope to TP202 (G OUT) and CH2 to TP102 (R OUT).
- Open the Lens iris to saturating the Signal at TP202.
- Adjust vertical level of CH2 on the Oscilloscope so that the Cross point of the G signal at TP202 becomes same level at that cross point of the R signal at TP102
- Adjust the VR102 (R WHITE CLIP) so that the Clip level of TP102 and saturation level of TP202 (G OUT) becomes coincide.
- Connect CH2 of the Oscilloscope to TP302.
- Open the lens iris to saturating the signal at TP202.
- Adjust vertical level of CH2 on the oscilloscope so that the cross point of the G signal at TP202 becomes same level at that cross point of the B signal at TP302.
- Adjust the VR102 (R WHITE CLIP) so that the clip level of TP102 and saturation level of TP202 (G OUT) becomes coincide.

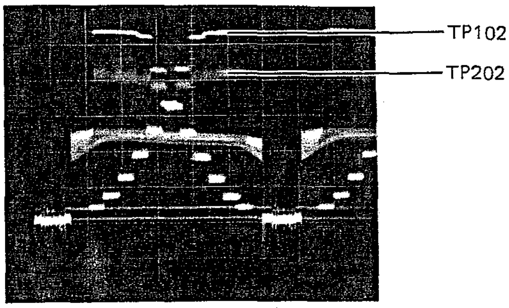


Fig. 4-2-17

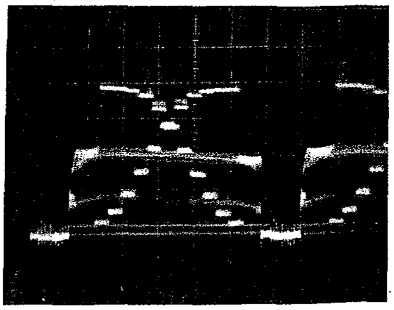


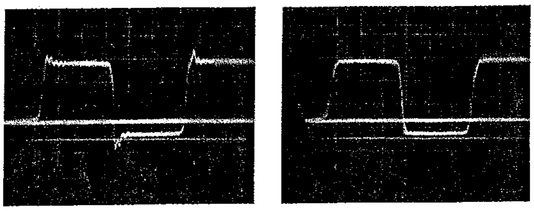
Fig. 4-2-18

- Confirm the colouration when fully open the lens iris.
- If camera has colourtion on the monitor.
  Adjust the VR102,202 and VR302 becomes no colourtion on the monitor.

(20) Preamp Frequency response adjustment

Test points:	**TP102 (R OUT)**	**Preamp board**
	TP202 (G OUT)	**Preamp board**
	TP302 (B OUT)	**Preamp board**
Adjust:	**CT101 (R FREQ)**	**Preamp board**
	CT201 (G FREQ)	**Preamp board**
	CT301 (B FREQ)	**Preamp board**

- Aim the camera at In-Mega cycle chart.
- Connect the oscilloscope to TP202 (G OUT) on the preamp board.
- Expand the 0.5 MHz waveform of In-Mega cycle chart using delayed sweep mode of oscilloscope.
- Adjust CT201 (G FREQ) so that decay edge and rise edge of the 0.5 MHz signal becomes right angle (no curl and no overshoot).
- Connect the oscilloscope to TP102 (R OUT) on the preamp board.
- Expand the 0.5 MHz waveform of In-Mega cycle chart using delayed sweep mode of oscilloscope.
- Adjust CT101 (R FREQ) so that decay edge and rise edge of the 0.5 MHz signal becomes right angle (no curl and no overshoot).
- Connect the oscilloscope to TP302 (B OUT) on the preamp board.
- Expand the 0.5 MHz waveform of the In-Mega cycle chart using delayed sweep mode of the oscilloscope.
- Adjust CT301 (B FREQ) so that decay edge and rise edge of the 0.5 MHz signal becomes right angle (no curl and no overshoot).



NO GOOD GOOD

Fig. 4-2-19

Prior to adjusting the preprocess board, switches and controls should be set as follows unless instructed otherwise.

Position of control and switches.

(Front)

- Lens Iris Control .... NOR

(Right side)

- High Gain Selection Switch .... 0 dB
- White Balance Selection switch .... MANUAL
- Color Bar/+6 dB/Camera Selection Switch .. CAMERA
- Filter Selection Wheel 1 (3200K)

(Mother board)

- Electronic Shutter On/Off Switch (SW11) ... OFF
- Scene File Selection Switch (SW10) 1
- Level and Zone Indicator Switch (SW9) ..... OFF
- User Set Switch (SW2) .... OFF
- Detail Frequency Band Selection Switch (SW3) .... OFF
- Detail Level Selection Switch (SW4) .... OFF
- Lens Iris Control (VR4) .... Mechanical center
- Total Pedestal Level Control (VR3) .... Mechanical center

○ IMPORTANT NOTICE

Preset the memory in the System Control board Procedure indicator below and do not set the Auto White and Auto Black Balance set switch (AWC, ABC) on the front panel throughout the adjustment.

- Disconnect the lens connector.
- Set the user set Switch to 1 or 2 position.
- Confirm the selected NO.1 INITIAL SET.
- Set the arrow to "KNEE" by the Item Switch SW7 on the Mother board.
- Set the "KNEE" to OFF by the Down Switch SW5 on the Mother board.
- Set the arrow to "WHITE CLIP" by the Item Switch SW7.
- Set the "WHITE CLIP" to OFF by the Down Switch SW5.
- Set the User Set Switch to OFF position.
- Short TP1 (RESET-1) and TP2 (GROUND) on the System Control board for approximately one second.
- Short TP3 (RESET-2) and TP4 (GROUND) on the System Control board for approximately one second.

(21) Pulse cancel adjustment

Test point :	**TP102 (R PREVIDEO)**	**Preprocess board**
	TP302 (G PREVIDEO)	**Preprocess board**
	TP502 (B PREVIDEO)	**Preprocess board**
Adjust :	**VR109 (R PULSE CANCEL)**	**Preprocess board**
	VR309 (G PULSE CANCEL)	**Preprocess board**
	VR509 (B PULSE CANCEL)	**Preprocess board**

- Cap on the Lens.
- Connect the oscilloscope to TP302 (G PREVIDEO) on the preporcess board.
- Adjust VR309 (G PULSE CANCEL) so that center of the signal level become 0 mV.
- Connect the oscilloscope to TP102 (R PREVIDEO) on the preprocess board.
- Adjust VR109 (R PULSE CANCEL) so that center of the signal level become 0 mV.
- Connect the oscilloscope to TP502 (B PREVIDEO) on the preprocess board.
- Adjust VR509 (B PULSE CANCEL) so that center of the signal level become 0 mV.

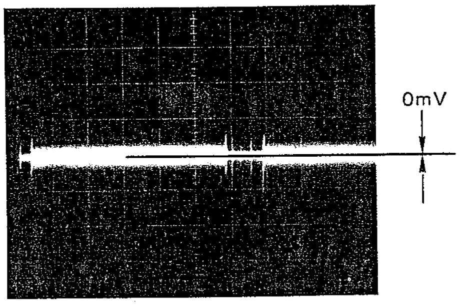


Fig. 4-2-20

(22) IRIS adjustment

Test point :	**TP201 (G IN)**	**Preamp board**
Adjust :	**Lens Iris**	**Camera**

- Aim the camera. at the Logarithmic gray scale chart. (lighting : 2000 Lux, 3200°K)
- Connect the oscilloscope to TP201 on the preamp board.
- Set the 20 MHz Filter of the oscilloscope to ON position.
- Adjust Lens Iris (MAN) so that the signal level become 200 mVp-p.
- After adjusting, do not touch the iris ring of the lens until (28) shutter pulse cancel adjustment.

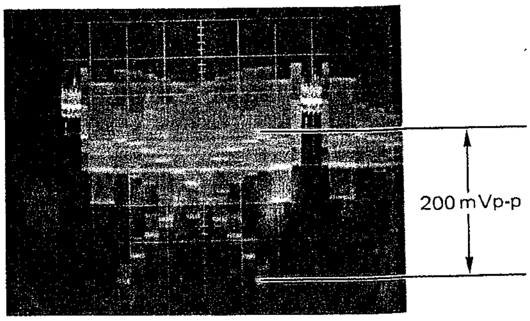


Fig.4-2-21

(23) Input Gain adjustment

Test point :	**TP102 (R PREVIDEO)**	**Preprocess board**
	TP302 (G PREVIDEO)	**Preprocess board**
	TP502 (B PREVIDEO)	**Preprocess board**
Adjust :	**VR101 (R INPUT GAIN)**	**Preprocess board**
	VR301 (G INPUT GAIN)	**Preprocess board**
	VR501 (B INPUT GAIN)	**Preprocess board**

- Aim the camera at the logarithmic gray scale chart (lighting is 2000 lux. 3200°K).
- Connect the Oscilloscope to TP302 (G PREVIDEO) on the Preprocess board.
- Adjust the VR301 (G INPUT GAIN) so that the G signal level becomes 0.7 Vp-p.
- Connect the Oscilloscope to TP102 (R PREVIDEO) on the Preprocess board.
- Adjust the VR101 (R INPUT GAIN) so that the R signal level becomes 0.7 Vp-p.
- Connect the Oscilloscope to TP502 (B PREVIDEO) on the Preprocess board.
- Adjust the VR501 (B INPUT GAIN) so that the B signal level becomes 0.7 Vp-p.

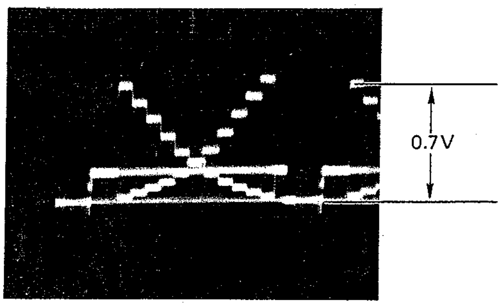


Fig. 4-2-22

(24) Pedestal coarse adjustment

Test point :	**TP104 (R GAIN)**	**Preprocess board**
	TP304 (G GAIN)	**Preprocess board**
	TP504 (B GAIN)	**Preprocess board**
Adjust :	**VR108 (R PEDESTAL)**	**Preprocess board**
	VR308 (G PEDESTAL)	**Preprocess board**
	VR508 (B PEDESTAL)	**Preprocess board**

- Cap on the lens.
- Connect the Oscilloscope to TP304 (G GAIN) on the Preprocess board.
- Adjust the VR308 (G PEDESTAL) so that the Pedestal level becomes 30 ± 5 mV.
- Connect the Oscilloscope to TP104 (R GAIN) on the Preprocess board.
- Adjust the VR108 (R PEDESTAL) so that the Pedestal level becomes 30 ± 5 mV.
- Connect the Oscilloscope to TP504 (B GAIN) on the Preporcess board.
- Adjust the VR508 (B PEDESTAL) so that the Pedestal level becomes 30 ± 5 mV.

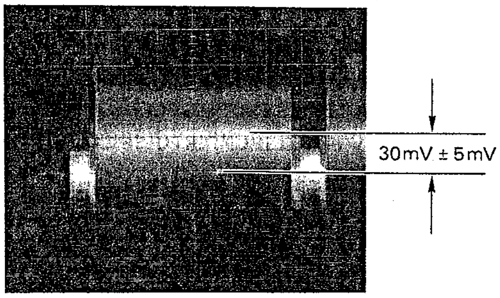


Fig.4-2-23

(25) Gain adjustment

Test point :	**TP104 (R GAIN)**	**Preprocess board**
	TP304 (G GAIN)	**Preprocess board**
	TP504 (B GAIN)	**Preprocess board**
Adjust :	**VR104 (R GAIN)**	**Preprocess board**
	VR304 (G GAIN)	**Preprocess board**
	VR504 (B GAIN)	**Preprocess board**

- Aim the camera at the logarithmic gray scale chart (lighting is 2000 lux, 3200°K).
- Connect the Oscilloscope to TP304 (G GAIN) on the Preprocess board.
- Adjust the VR304 (G GAIN) so that the G signal level becomes 0.7 Vp-p.
- Connect the Oscilloscope to TP104 (R GAIN) on the Preprocess board.
- Adjust the VR104 (R GAIN) so that the R signal level becomes 0.7 Vp-p.
- Connect the Oscilloscope to TP504 (B GAIN) on the Preprocess board.
- Adjust the VR504 (B GAIN) so that the B signal level becomes 0.7 Vp-p.

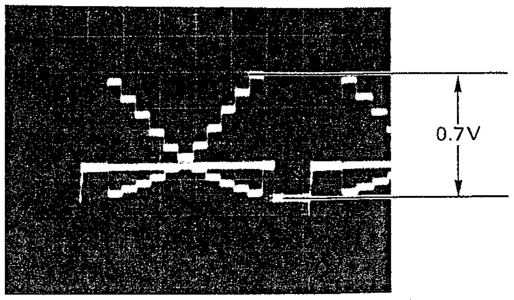


Fig.4-2-24

(26) Gamma balance adjustment

Test point :	**TP105 (R GAMMA)**	**Preprocess board**
	TP305 (G GAMMA)	**Preprocess board**
	TP505 (B GAMMA)	**Preprocess board**
Adjust :	**VR105 (R GAMMA BAL)**	**Preprocess board**
	VR305 (G GAMMA BAL)	**Preprocess board**
	VR505 (B GAMMA BAL)	**Preprocess board**

- Aim the camera at the logarithmic gray scale chart (lighting is 2000 lux, 3200°K).
- Connect the Oscilloscope to TP305 (G GAMMA) on the Pre process board.

- Adjust the VR305 (G GAMMA BAL) so that the signal level becomes 0.7 Vp-p.
- Connect the Oscilloscope to TP105 (R GAMMA) on the Pre process board.
- Adjust the VR105 (R GAMMA BAL) so that the signal level becomes 0.7 Vp-p.
- Connect the Oscilloscope to TP505 (B GAMMA) on the Pre process board.
- Adjust the VR505 (B GAMMA BAL) so that the signal level becomes 0.7 Vp-p.

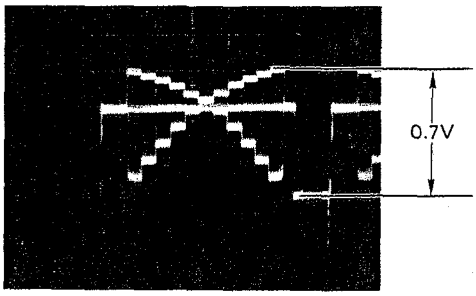


Fig. 4-2-25

(27) Preprocess Output adjustment

Adjust : **VR106 (R GAMMA)** **Preprocess board**
VR306 (G GAMMA) **Preprocess board**
VR506 (B GAMMA) **Preprocess board**
VR107 (R OUTPUT GAIN) **Preprocess board**
VR307 (G OUTPUT GAIN) **Preprocess board**
VR507 (B OUTPUT GAIN) **Preprocess board**
VR108 (R PEDESTAL) **Preprocess board**
VR308 (G PEDESTAL) **Preprocess board**
VR508 (B PEDESTAL) **Preprocess board**
VR109 (R PULSE CANCEL) **Preprocess board**
VR309 (G PULSE CANCEL) **Preprocess board**
VR509 (B PULSE CANCEL) **Preprocess board**
Observe : **Waveform Monitor**

- Aim the Camera at logarithmic gray scale chart (lighting is 2000 lux, 3200°K).
- Adjust VR306 (G GAMMA), VR106 (R GAMMA) and VR506 (B GAMMA) so that gamma cross point level becomes 0.4V.
- Adjust VR307 (G OUTPUT GAIN), VR107 (R OUTPUT GAIN), and VR507 (B OUTPUT GAIN) so that the video signal level becomes 0.7V.

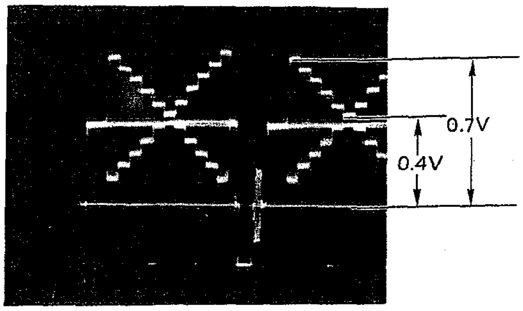


Fig. 4-2-26

- Cap on the lens.
- Adjust VR308 (G PEDESTAL), VR108 (R PEDESTAL) and VR508 (B PEDESTAL) so that the Pedestal level becomes 0.035V.
- Set the High Gain Selection Switch to + 18 dB position.
- Adjust VR309 (G PULSE CANCEL) VR109 (R PULSE CANCEL), and VR509 (B PULSE CANCEL) so that Pedestal level becomes 0.035V.

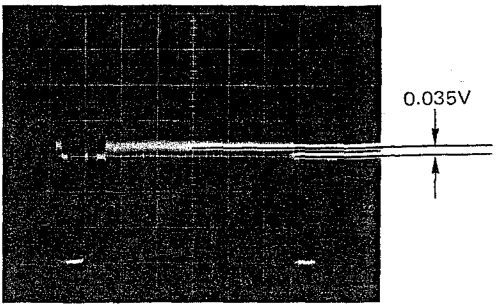


Fig.4-2-27

(28) Shutter Pulse Cancel Adjustment

Test point : ***Monitor output connector***
Adjust : **VR110 (R SHUTTER PULSE CANCEL)**
VR310 (G SHUTTER PULSE CANCEL)
VR510 (B SHUTTER PULSE CANCEL)
Observe : **Vectorscope**

- Cap on the lens.
- Set the Electronic shutter ON/OFF switch to ON position.
- Set the Electronic shutter speed selection switch to 1/500 position.
- Set the High gain selection switch to + 18 dB position.
- Adjust VR310 (G SHUTTER PULSE CANCEL) VR110 (R SHUTTER PULSE CANCEL), and VR510 (B SHUTTER PULSE CANCEL) alternately so that center point is positioned at center of the vectorscope.

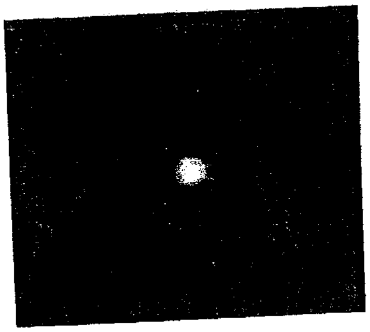


Fig. 4-2-28

- Reset the High Gain Selection switch to 0 dB and Electronic shutter ON/OFF Switch to OFF position.

(29) KNEE POINT Adjustment

Test point :	**TP106 (R OUTPUT)**	**Preprocess board**
	TP306 (G OUTPUT)	**Preprocess board**
	TP506 (B OUTPUT)	**Preprocess board**
Adjust :	**VR111 (R KNEE POINT)**	**Preprocess board**
	VR311 (G KNEE POINT)	**Preprocess board**
	VR511 (B KNEE POINT)	**Preprocess board**

- Aim the camera at logarithmic gray scale chart (lighting is 2000 lux, 3200°K).
- Set the Scene File Selection switch to 1 position.
- Set the User set switch to 1 or 2.
- Set the Cursor to "KNEE" line by the Item switch.
- Set the Mode to "MAN" by the Down switch.
- Set the Cursor to WHITE CLIP to "ON" by the Down switch.
- Set the User set switch to OFF.
- Connect the Oscilloscope to TP306 (G OUT) on the Preprocess board.
- Open the lens iris so that the knee level at TP306 (G OUT) becomes 0.67V.
- Adjust VR311 (G KNEE POINT) so that the starting point of the Knee level becomes 0.69V.
- Connect the Oscilloscope to TP106 (R OUT) on the Preprocess board.
- Adjust VR111 (R KNEE POINT) so that the starting point of the Knee level becomes 0.69V.
- Connect the Oscilloscope to TP506 (B OUT) on the Preprocess board.
- Adjust VR511 (B KNEE POINT) so that the starting point of the Knee level becomes 0.69V.

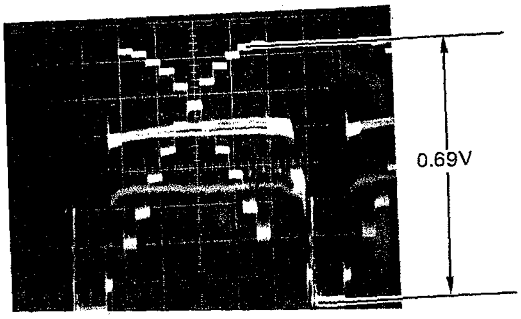


Fig. 4-2-29

(30) White shading balance adjustment

Test point :	**TP106 (R OUTPUT)**	**Preprocess board**
	TP306 (G OUTPUT)	**Preprocess board**
	TP506 (B OUTPUT)	**Preprocess board**
Adjust :	**VR112 (R W. SHD)**	**Preprocess board**
	VR312 (G W. SHD)	**Preprocess board**
	VR512 (B W. SHD)	**Preprocess board**

- Cap on the lens
- Set the Scene File Selection Switch to 1 position.
- Set the User set switch to 1 or 2.
- Select the Page switch to No. 3.
- Select the Item switch to WHITE SHD and Up switch to ON.
- Change the data "WHITE SHD" to "TEST" by executing AWC while pressing the Data input switch SW1 on the System control board.
- Connect the oscilloscope to TP 306 (G OUT) on the Preprocess board.
- Adjust VR312 (G W. SHD) so that signal becomes minimum.
- Connect the oscilloscope to TP 106 (R OUT) on the Preprocess board.
- Adjust VR112 (R W. SHD) so that signal becomes minimum.
- Connect the oscilloscope to TP 506 (B OUT) on the Preprocess board.
- Adjust VR512 (B W. SHD) so that signal becomes minimum.
- Push the Data input switch SW1 on the System control board again.
- Set the user set switch to OFF positions.

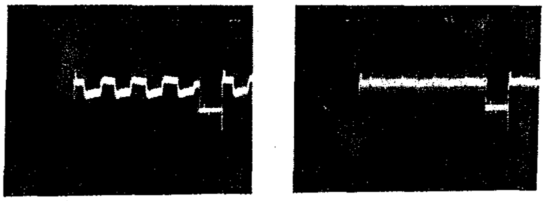


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Fig. 4-2-30

(31) Frequency response adjustment

Test point:	**TP104 (R GAIN)**	**Preprocess board**
	TP304 (G GAIN)	**Preprocess board**
	TP504 (B GAIN)	**Preprocess board**
Adjust:	**CT101 (R FREQ RESPONSE)**	**Preprocess board**
	CT301 (G FREQ RESPONSE)	**Preprocess board**
	CT501 (B FREQ RESPONSE)	**Preprocess board**

- Set the Filter wheel to 1 (3200°K) position.
- Aim the Camera at the In-Mega cycle chart.
- Set the Oscilloscope at H rate.
- Connect the oscilloscope to TP104 (R GAIN).
- Adjust CT101 (R FREQ RESPONSE) so that the waveform from 0.5 MHz to 6 MHz becomes flat as much as possible.
- Connect the oscilloscope to TP304 (G GAIN).
- Adjust CT301 (G FREQ RESPONSE) so that the waveform from 0.5 MHz to 6 MHz becomes flat as much as possible.
- Connect the oscilloscope to TP504 (B GAIN).
- Adjust CT501 (B FREQ RESPONSE) so that the waveform from 0.5 MHz to 6 MHz becomes flat as much as possible.

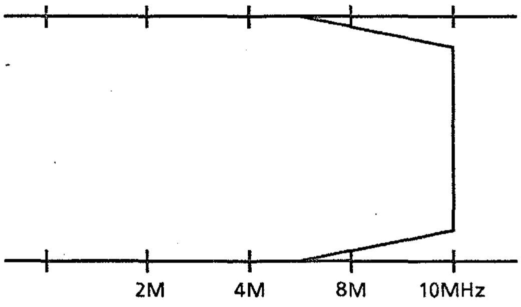


Fig. 4-2-31

(32) Iris gain adjustment

Test point :	**MONITOR OUTPUT connector**	
Adjust :	**VR1 (IRIS GAIN)**	**Preprocess board**
	VR2 (ANTI CLOSE)	**Preprocess board**
	VR4 (IRIS LEVEL)	**Mother board**
Observe :	**Video Monitor**	

Position of the Controls and Switches.

(Front)

- Filter Selection Wheel .... "1"

(Right Side) Viewed from front

- High Gain Selection Switch .... "0 dB"
- Electronic Shutter ON/OFF Switch .... "OFF"
- User set Switch .... "1 or 2"

(Lens)

- Iris Control Selection Switch .... "AUTO"
- Connect the Lens connector to left side of the camera.
- Aim the Camera at the logarithmic gray scale chart (lighting is 2000 lux, 3200°K).
- Observe the viewfinder and select the No. 2 INITIAL SET by the Page switch.
- Set the "IRIS P/A" to "PEAK" and "IRIS GATE" to "1/3 CUT".
- Set the User set switch to OFF.
- Set VR1 (IRIS GAIN) on the Preprocess board so that signal level becomes maximum.
- Adjust VR4 (IRIS LEVEL) on the Mother board so that the monitor output signal level becomes 0.7V.
- Repeat adjusting VR1 on the Preprocess board and VR4 on the Mother board so that waveform level becomes 0.7V and there is no hunting.
- Adjust VR2 (ANTI CLOSE) does not hunt when change the gain to +24 dB.

- Confirm that the lens iris opens by 1/2 F step when the lens iris Selection switch is set to 1/2 open position.
- Confirm that the lens iris closes by 1/2F step when the lens iris Selection switch is set to 1/2 close position.

(33) Auto Black SHD adjustment

- Cap on the lens.
- Set the Scene File selection switch to 1 and user set switch to 1 or 2.
- Observe the viewfinder and select the No. 3 INITIAL SET by page switch.
- Confirm the "BLACK SHD" line is selected.
- Execute the ABC by pressing the Auto white / Auto Black Balance set switch and confirm the data is changing to ACTIVE, blinking Auto Warning Indicator (Green) on the viewfinder screen.
- Confirm completion of ABC set and data of BLACK SHD is changing to ON.

- Set the User set switch to OFF position.

(34) Battery warning adjustment

Test point : **10-12 pin (+12V IN) Power board**
31-33 pin (GROUND) power board
Adjust : **VR5 (BATTERY WARNING LEVEL) Mother board**
Observe : **1.5 Electronic viewfinder**

- Connect the (+) of Digital Voltmeter to Pin 10-12 (+12V IN) and (-) Digital voltmeter to Pin 31-33 on the Power board.
- Adjust DC power supply so that the DC voltage at pin 10-12 become +10.6V.
- Turn VR5 (BATTERY WARNING LEVEL) fully clockwise and turn it back slowly and stop it when the indicator starts blinking of the B battery warning indicator in the Electoric viewfinder.

(35) Auto Black Control adjustment

Adjust : **SW1 (DATA INPUT SWITCH) System Control board**
SW8 (PAGE SWITCH) Mother board
SW6 (UP SWITCH) Mother board
SW5 (DOWN SWITCH) Mother board
Observe : **Vectorscope**
Waveform Monitor

- Confirm the Electronic Shutter Switch is set to OFF position and High Gain Selection Switch is set to 0 dB .
- Set the White Balance Selection switch to AWC A position.
- Aim the camera at logarithmic gray scale chart (lighting is 2000 lux, 3200°K).
- Set the iris Control Selection Switch of lens to M(Manual) position and adjust lens iris so that the Video signal level of the Waveform Monitor becomes 0.63V.
- Excute the AWC.
- Cap on the Lens.

<1> Execute the ABC while pressing the Data Input Switch SW1 on the System Control board and confirm the screen of the Viewfinder is changing to ABC ADJ mode.
<2> Set the R ch by Page Switch SW8.
<3> Adjust the Up switch SW6 and Down Switch SW5 so that the vector positions at center of the vectorscope.
<4> Set the B ch by the Page Switch SW8.
<5> Adjust the Up switch SW6 and Down Switch SW5 so that the vector positions at center of the Vectorscope.
<6> Push the Data Input Switch SW1 on the System Control board.
<7> Execute the ABC while pressing the Check Button on the Mother board.
<8> Execute the ABC while pressing the Recording Time Reset Button on the Mother board.
<9> Repeat the procedure <1> ~ <6> again.
<10> Execute the ABC (pressing more than 3 seconds).
<11> Repeat the procedure <8> again.

(36) Auto White Control Adjustment

Adjust : **SW1 (DATA INPUT SWITCH) System Control board**
SW8 (PAGE SWITCH) Mother board
SW6 (UP SWITCH) Mother board
SW5 (DOWN SWITCH) Mother board
Observe : **Waveform monitor**
Vectorscope

- Aim the camera at the logarithmic gray scale chart (lighting is 2000 lux 3200°K).
- Confirm the Electric Shutter Switch is set to OFF position and High Gain Selection Switch is set to 0 dB position.
- Set the White Balance Selection Switch to AWC A position and Filter Selection Wheel to 1 position.

<1> Set the lens iris so that the waveform level becomes 0.63V.
<2> Execute the AWC
<3> Execute the AWC while pressing Data Input Switch SW1 on the System Control board and confirm Electronic viewfinder screen indicate to ADJ mode.

```
AWC ADJ
PAGE   : SELECT          RCH
UP     : DATA +
DOWN   : DATA -
```

<4> Adjust the Up Switch SW6 and Down Switch SW5 on the Mother board so that the vector positions at center of the vectroscope.
<5> Select the B ch mode by the PAGE switch.
<6> Repeat the procedure <4> again.

<7> Push Data Input Switch SW1 on the System Control board when finished this adjustment.

<8> Set the Electric Shutter Switch, High Gain Selection Switch according to the Table below and execute AWC.

Note : Keep the video output level for 0.63V by lens iris.

Color Bar/ +6dB/ Camera Selection Switch	High Gain Selection Switch	Gain (dB)	Electronic Shutter					
			OFF	1/120	1/250	1/500	1/1000	1/2000
CAM	0 dB	0 dB	-	1	2	3	4	5
+6 dB	0 dB	+6 dB	6	7	8	9	10	11
CAM	+9 dB	+9 dB	12	13	14	15	16	17
+6 dB	+9 dB	+15 dB	18	19	20	21	22	23
CAM	+18 dB	+18 dB	24	25	26	27	28	29
+6 dB	+18 dB	+24 dB	30	31	32	33	34	35

Table 4-1

■ Adjustment procedure of auto scan by the Remote Control Box (RCB)

- Connect the RCB Cable between Remote Control Unit Extension connector on the RCB and RCB Connector on the Left side of Camera.
- Turn ON the RCB Operation Switch on the RCB.
- Set the High Gain switch to +9 dB or +18 dB.
- Set the Iris selection switch of the RCB to Auto position.
- Set the Lens Iris Selection Switch on the front of the Camera to 1/2 CLOSE position.
- Execute the AWC while pressing Recording Time Reset Button SW1 on the Setup board of the Camera.

Note : If stop the auto scan, turn off the RCB Operation Switch on the RCB to BAR position.

(37) Flare adjustment

Adjust : **SW1 (DATA INPUT SWITCH)**
System Control board
SW5 (DOWN SWITCH)
Mother board
SW6 (UP SWITCH) **Mother board**
SW7 (ITEM SWITCH)
Mother board
SW8 (PAGE SWITCH)
Mother board
SW9 (USER SET SWITCH)
Mother board
SW10 (SCENE FILE SELECTION SWITCH)
Mother board
SW14 (CHECK BUTTON)
Mother board

- Aim the camera at the logarithmic gray scale chart (lighting is 2000 lux 3200°K).
- Set the User Set Swith on the moter board to position 1 or 2.
- Set the arrow to "FLARE" by Item Switch SW7 on the Mother board and set to ON.
- Set the lens iris so that the video output level becomes 0.7V and note the F (A).
- Open 2F lens iris from (A).
- Set the Scene File Selection Switch SW10 on the Mother board to 1 position.
- Set the User Set Switch SW9 on the Mother board to 1 position while pressing the Data Input Switch SW1 on the System Control board.
- Select the USER SET MENU 3 by the Page Switch SW8 on the Mother board.
- Set the arrow to "FLARE GREEN" by the Item Switch SW7 on the Mother board.
- Adjust data by the Up Switch SW6 and Down Switch SW5 on the Mother board so that the carrier leak on the lowest step on gray scale becomes minimum.
- Set the arrow to "FLARE RED" by Item Switch SW7.
- Adjust data by the Up Switch SW6 and Down Switch SW5 on the Mother board so that the carrier leak on the lowest step on gray scale becomes minimum.
- Set the arrow to "FLARE BLUE" by the Item Switch SW7.
- Adjust data by the Up Switch SW6 and Down Switch SW5 on the Mother board so that the carrier leak on the lowest step on gray scale becomes minimum.
- Repeat the adjustment of GREEN, RED and BLUE of FLARE so that the carrier leak on the lowest step of gray scale becomes minimum.
- Set the User Set Switch SW9 to OFF position.

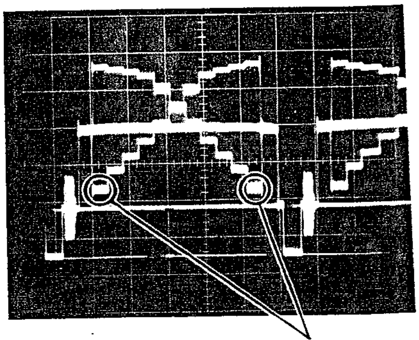

Minimize the carrier

Fig. 4-2-32

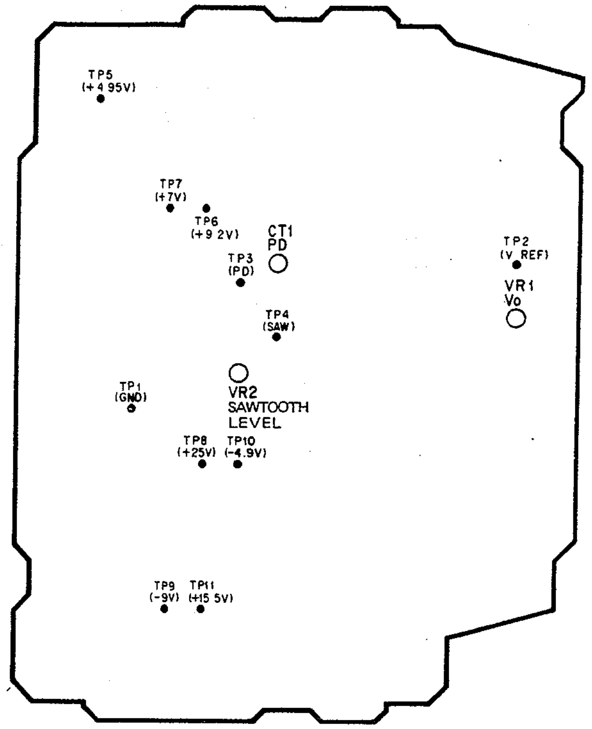
(37) Anti close adjustment

Adjust : VR2 (ANTI CLOSE) Preprocess board
Observe : Video monitor

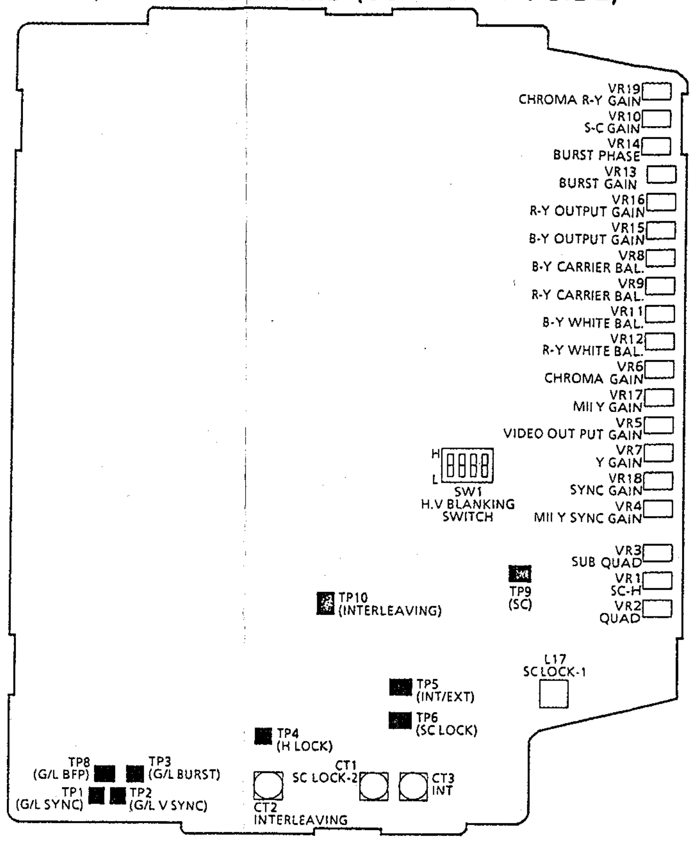
- Set the lens iris control switch to AUTO position.
- Aim the camera at the halogen lamp.
- Adjust VR2 (ANTI CLOSE) on the Preprocess board so that Lens iris becomes F16.
- Cap on the lens.
- Confirm that the lens iris becomes F16 when the cap is taken off the lens.
- If not readjust VR2 again.

5. LOCATION OF TEST POINTS AND ADJUSTING CONTROLS

POWER BOARD

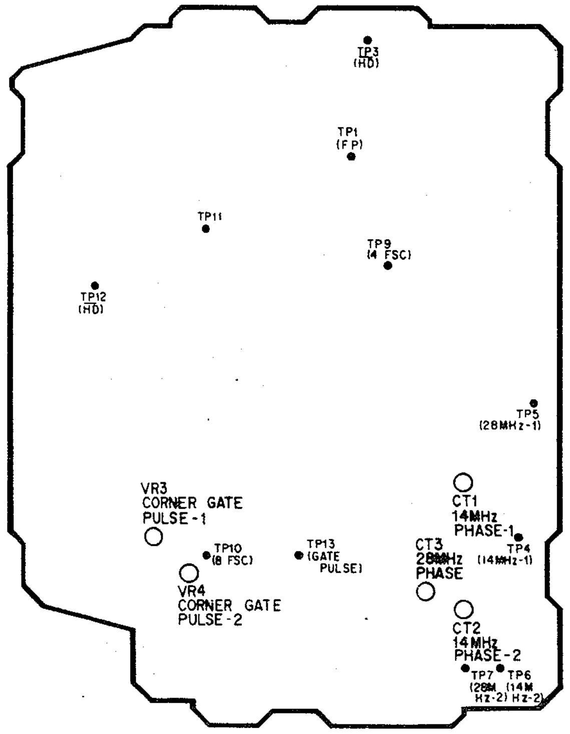

TP5
(+4 95V)
TP7
(+7V)
TP6
(+9 2V)
CT1
PD
TP3
(PD)
TP2
(V REF)
VR1
Vo
TP4
(SAW)
TP1
(GND)
VR2
SAWTOOTH
LEVEL
TP8
(+25V)
TP10
(-4.9V)
TP9
(-9V)
TP11
(+15 5V)

SYNC/ENCODER BOARD (COMPONENT SIDE)

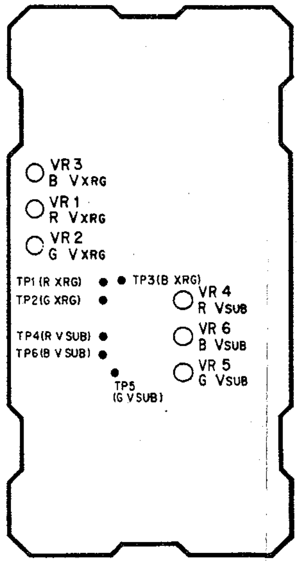

VR19
CHROMA R-Y GAIN
VR10
S-C GAIN
VR14
BURST PHASE
VR13
BURST GAIN
VR16
R-Y OUTPUT GAIN
VR15
B-Y OUTPUT GAIN
VR8
B-Y CARRIER BAL.
VR9
R-Y CARRIER BAL.
VR11
B-Y WHITE BAL.
VR12
R-Y WHITE BAL.
VR6
CHROMA GAIN
VR17
MII Y GAIN
VR5
VIDEO OUT PUT GAIN
VR7
Y GAIN
VR18
SYNC GAIN
VR4
MII Y SYNC GAIN
H
L
SW1
H.V BLANKING
SWITCH
VR3
SUB QUAD
VR1
SC-H
VR2
QUAD
TP9
(SC)
TP10
(INTERLEAVING)
L17
SC LOCK-1
TP5
(INT/EXT)
TP6
(SC LOCK)
TP4
(H LOCK)
TP8
(G/L BFP)
TP3
(G/L BURST)
TP1
(G/L SYNC)
TP2
(G/L V SYNC)
CT1
SC LOCK-2
CT3
INT
CT2
INTERLEAVING

SYSTE

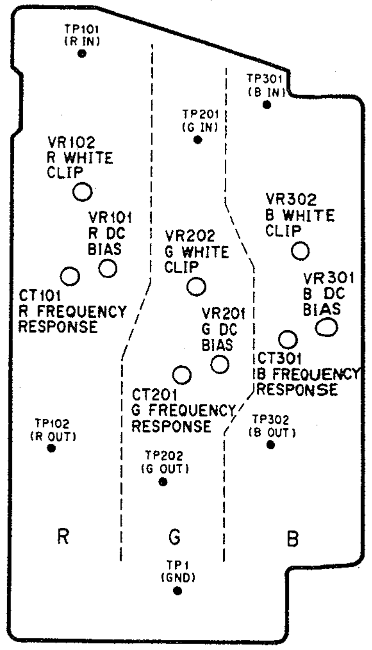
DIGITAL PROCESS BOARD

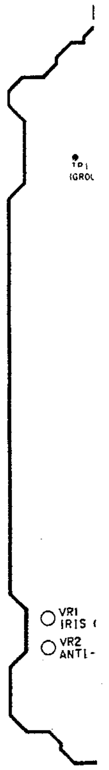

TP3
(HD)
TP1
(F P)
TP11
TP9
(4 FSC)
TP12
(HD)
TP5
(28MHz-1)
VR3
CORNER GATE
PULSE-1
CT1
14MHz
PHASE-1
TP10
(8 FSC)
TP13
(GATE
PULSE)
CT3
28MHz
PHASE
TP4
(14MHz-1)
VR4
CORNER GATE
PULSE-2
CT2
14MHz
PHASE-2
TP7
(28M
Hz-2)
TP6
(14M
Hz-2)

DRIVE BOARD


VR3
B VXRG
VR1
R VXRG
VR2
G VXRG
TP1 (R XRG)
TP3(B XRG)
TP2(G XRG)
VR4
R VSUB
TP4(R V SUB)
VR6
B VSUB
TP6(B V SUB)
VR5
G VSUB
TP5
(G V SUB)

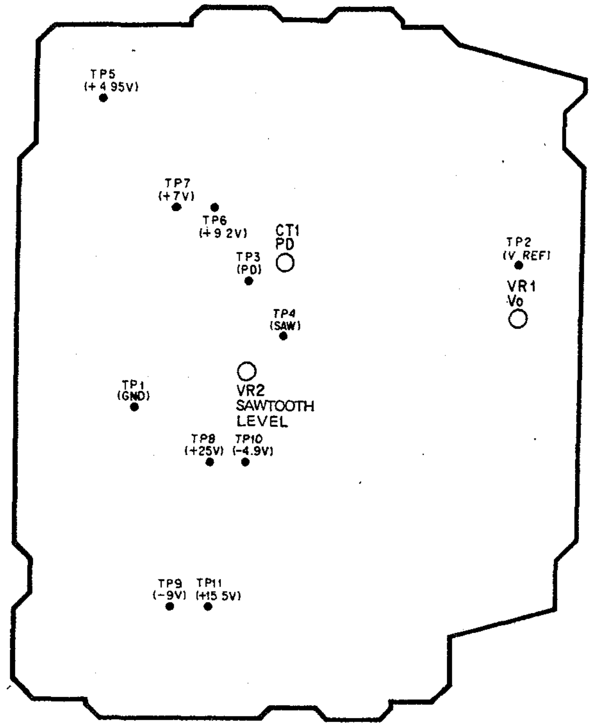
PREAMP BOARD


TP101
(R IN)
TP301
(B IN)
TP201
(G IN)
VR102
R WHITE
CLIP
VR302
B WHITE
CLIP
VR101
R DC
BIAS
VR202
G WHITE
CLIP
VR301
B DC
BIAS
CT101
R FREQUENCY
RESPONSE
VR201
G DC
BIAS
CT301
B FREQUENCY
RESPONSE
CT201
G FREQUENCY
RESPONSE
TP102
(R OUT)
TP302
(B OUT)
TP202
(G OUT)
R
G
B
TP1
(GND)

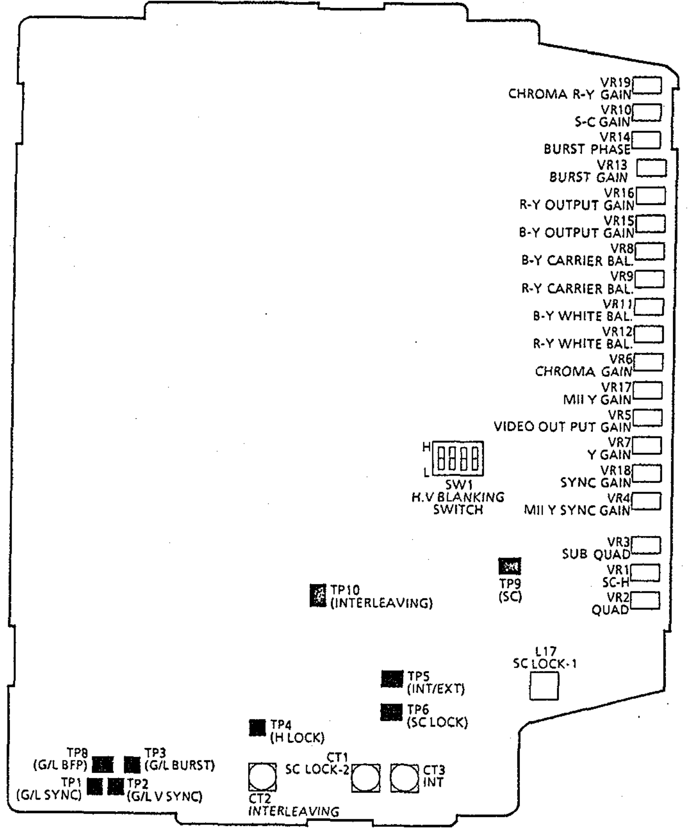

TP1
(GROU
VR1
IRIS
VR2
ANTI-

5. LOCATION OF TEST POINTS AND ADJUSTING CONTROLS

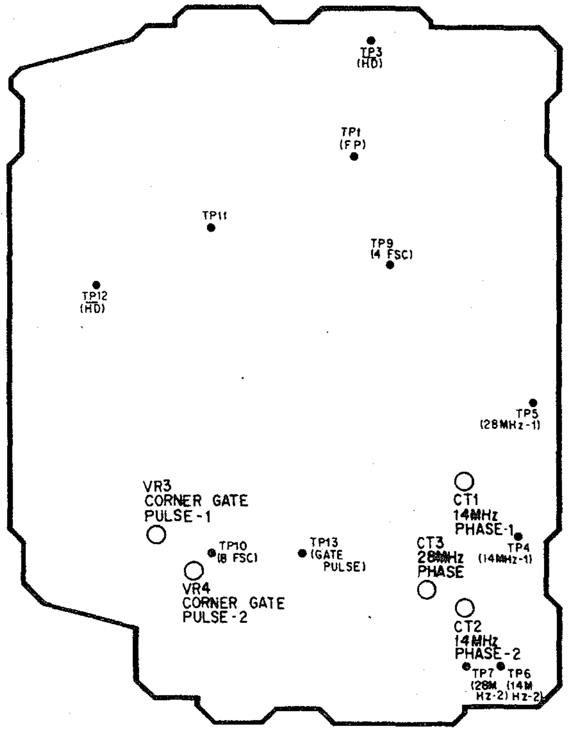
POWER BOARD


TP5 (+4.95V)
TP7 (+7V)
TP6 (+9.2V)
CT1 PD
TP3 (PD)
TP2 (V REF)
VR1 Vo
TP4 (SAW)
TP1 (GND)
VR2 SAWTOOTH LEVEL
TP8 (+25V)
TP10 (-4.9V)
TP9 (-9V)
TP11 (+15.5V)

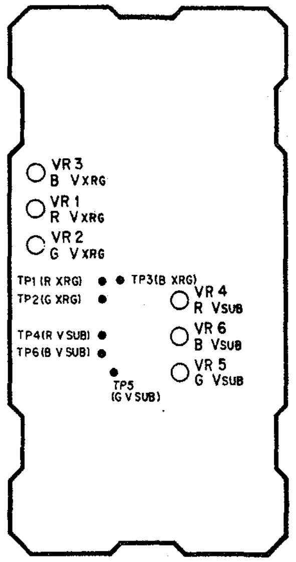
SYNC/ENCODER BOARD (COMPONENT SIDE)


VR19 CHROMA R-Y GAIN
VR10 S-C GAIN
VR14 BURST PHASE
VR13 BURST GAIN
VR16 R-Y OUTPUT GAIN
VR15 B-Y OUTPUT GAIN
VR8 B-Y CARRIER BAL.
VR9 R-Y CARRIER BAL.
VR11 B-Y WHITE BAL.
VR12 R-Y WHITE BAL.
VR6 CHROMA GAIN
VR17 MII Y GAIN
VR5 VIDEO OUT PUT GAIN
VR7 Y GAIN
VR18 SYNC GAIN
VR4 MII Y SYNC GAIN
H
L
SW1 H.V BLANKING SWITCH
VR3 SUB QUAD
VR1 SC-H
VR2 QUAD
TP9 (SC)
TP10 (INTERLEAVING)
L17 SC LOCK-1
TP5 (INT/EXT)
TP6 (SC LOCK)
TP4 (H LOCK)
TP8 (G/L BFP)
TP3 (G/L BURST)
TP1 (G/L SYNC)
TP2 (G/L V SYNC)
CT1 SC LOCK-2
CT3 INT
CT2 INTERLEAVING

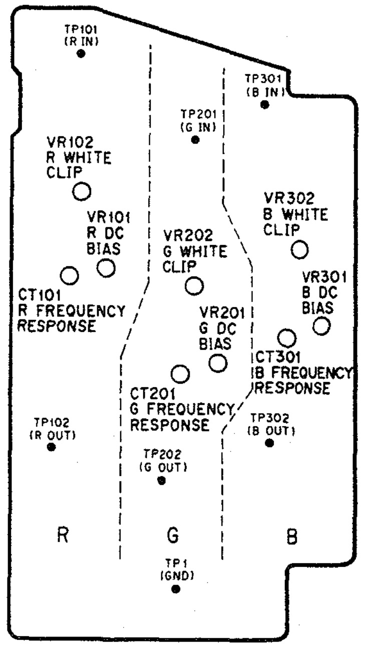
DIGITAL PROCESS BOARD


TP3 (HD)
TP1 (FP)
TP11
TP9 (4 FSC)
TP12 (HD)
TP5 (28MHz-1)
VR3 CORNER GATE PULSE-1
TP10 (8 FSC)
TP13 (GATE PULSE)
VR4 CORNER GATE PULSE-2
CT1 14MHz PHASE-1
TP4 (14MHz-1)
CT3 28MHz PHASE
CT2 14MHz PHASE-2
TP7 (28M Hz-2)
TP6 (14M Hz-2)

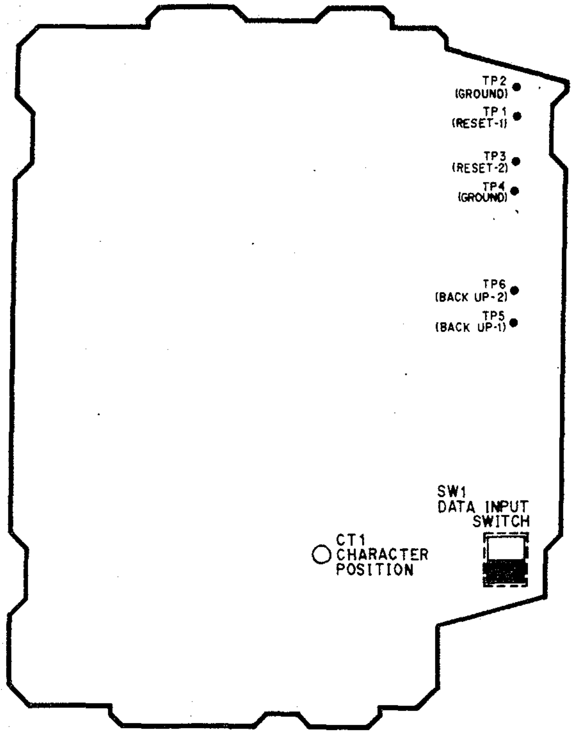
DRIVE BOARD


VR3 B VXRG
VR1 R VXRG
VR2 G VXRG
TP1 (R XRG)
TP3 (B XRG)
TP2 (G XRG)
VR4 R VSUB
TP4 (R V SUB)
TP6 (B V SUB)
VR6 B VSUB
VR5 G VSUB
TP5 (G V SUB)

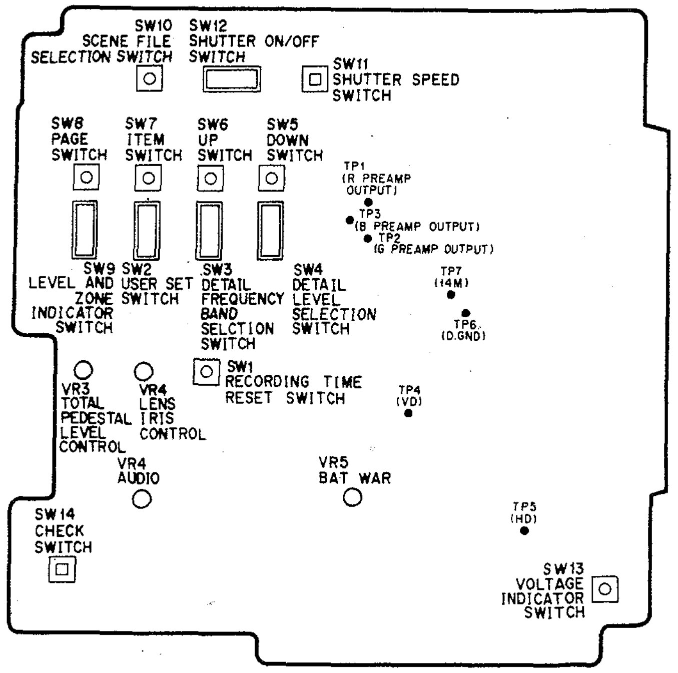
PREAMP BOARD


TP101 (R IN)
TP301 (B IN)
TP201 (G IN)
VR102 R WHITE CLIP
VR101 R DC BIAS
VR202 G WHITE CLIP
VR302 B WHITE CLIP
VR301 B DC BIAS
CT101 R FREQUENCY RESPONSE
VR201 G DC BIAS
CT301 B FREQUENCY RESPONSE
CT201 G FREQUENCY RESPONSE
TP102 (R OUT)
TP302 (B OUT)
TP202 (G OUT)
R
G
B
TP1 (GND)

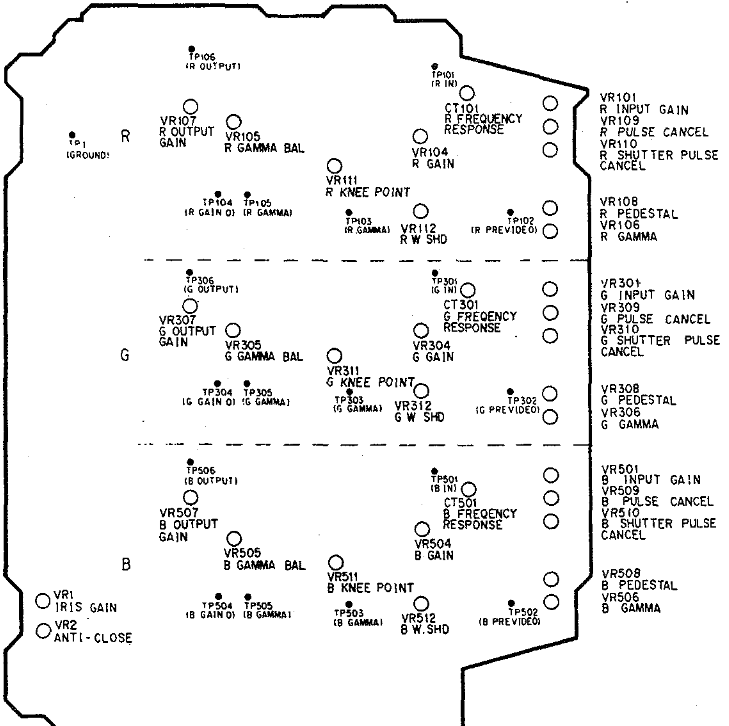
SYSTEM CONTROL BOARD


TP2 (GROUND)
TP1 (RESET-1)
TP3 (RESET-2)
TP4 (GROUND)
TP6 (BACK UP-2)
TP5 (BACK UP-1)
SW1 DATA INPUT SWITCH
CT1 CHARACTER POSITION

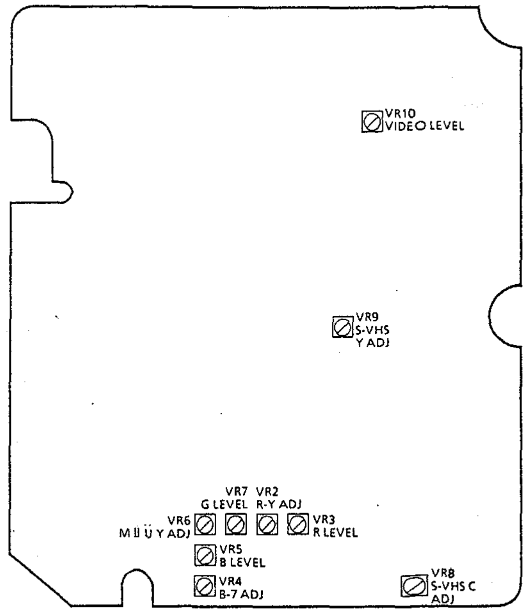
MOTHER BOARD


SW10 SCENE FILE SELECTION SWITCH
SW12 SHUTTER ON/OFF SWITCH
SW11 SHUTTER SPEED SWITCH
SW8 PAGE SWITCH
SW7 ITEM SWITCH
SW6 UP SWITCH
SW5 DOWN SWITCH
TP1 (R PREAMP OUTPUT)
TP3 (B PREAMP OUTPUT)
TP2 (G PREAMP OUTPUT)
SW9 LEVEL AND ZONE INDICATOR SWITCH
SW2 USER SET SWITCH
SW3 DETAIL FREQUENCY BAND SELCTION SWITCH
SW4 DETAIL LEVEL SELECTION SWITCH
TP7 (14M)
TP6 (D.GND)
VR3 TOTAL PEDESTAL LEVEL CONTROL
VR4 LENS IRIS CONTROL
SW1 RECORDING TIME RESET SWITCH
TP4 (VD)
VR4 AUDIO
VR5 BAT WAR
SW14 CHECK SWITCH
TP5 (HD)
SW13 VOLTAGE INDICATOR SWITCH

PRE PROCESS BOARD

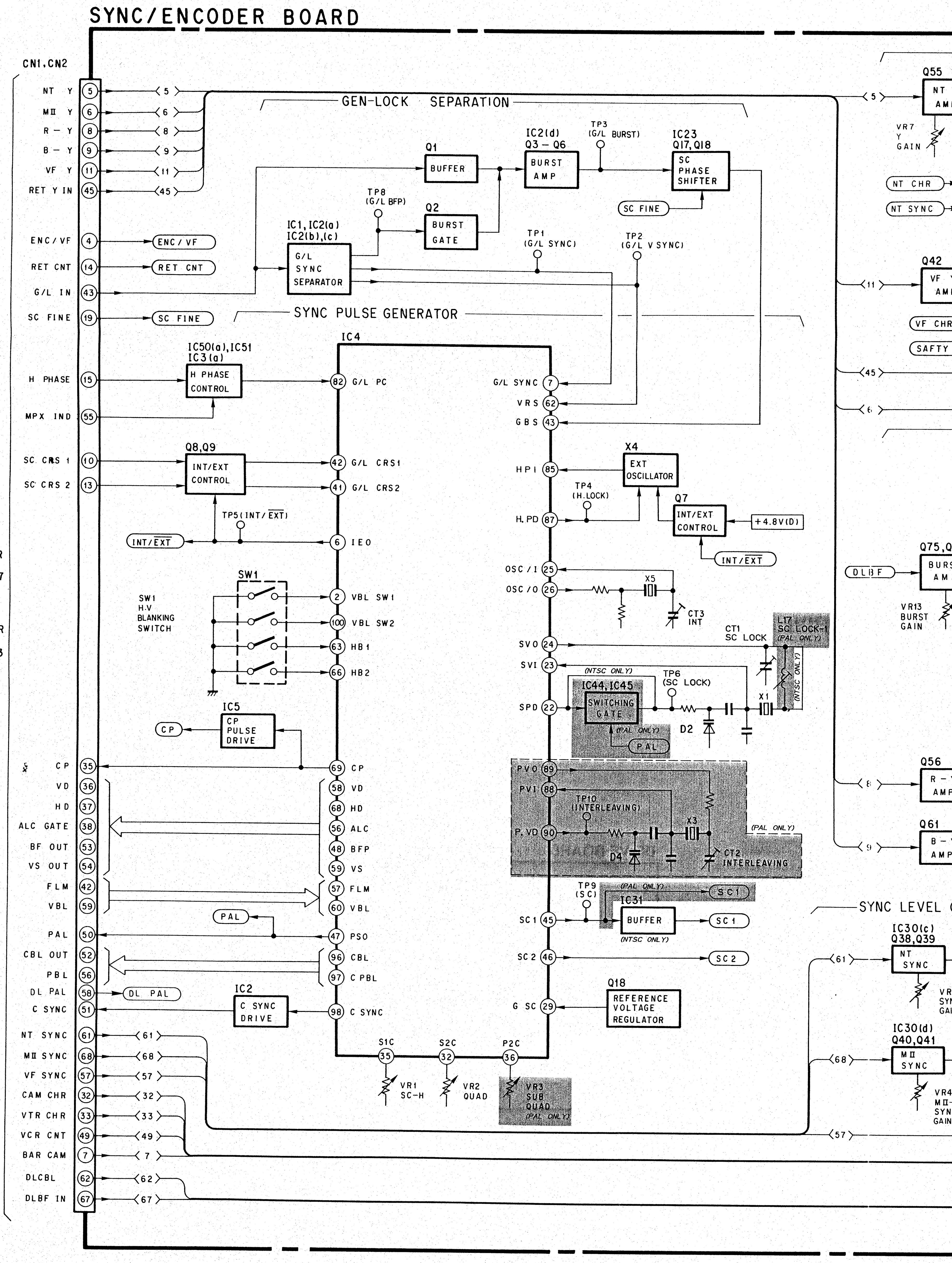

TP106 (R OUTPUT)
TP101 (R IN)
TP1 (GROUND)
R
VR107 R OUTPUT GAIN
VR105 R GAMMA BAL
CT101 R FREQUENCY RESPONSE
VR104 R GAIN
VR111 R KNEE POINT
TP104 (R GAIN 0)
TP105 (R GAMMA)
TP103 (R GAMMA)
VR112 R W SHD
TP102 (R PREVIDEO)
VR101 R INPUT GAIN
VR109 R PULSE CANCEL
VR110 R SHUTTER PULSE CANCEL
VR108 R PEDESTAL
VR106 R GAMMA
TP306 (G OUTPUT)
TP301 (G IN)
G
VR307 G OUTPUT GAIN
VR305 G GAMMA BAL
CT301 G FREQENCY RESPONSE
VR304 G GAIN
VR311 G KNEE POINT
TP304 (G GAIN 0)
TP305 (G GAMMA)
TP303 (G GAMMA)
VR312 G W SHD
TP302 (G PREVIDEO)
VR301 G INPUT GAIN
VR309 G PULSE CANCEL
VR310 G SHUTTER PULSE CANCEL
VR308 G PEDESTAL
VR306 G GAMMA
TP506 (B OUTPUT)
TP501 (B IN)
B
VR507 B OUTPUT GAIN
VR505 B GAMMA BAL
CT501 B FREQENCY RESPONSE
VR504 B GAIN
VR511 B KNEE POINT
TP504 (B GAIN 0)
TP505 (B GAMMA)
TP503 (B GAMMA)
VR512 B W.SHD
TP502 (B PREVIDEO)
VR501 B INPUT GAIN
VR509 B PULSE CANCEL
VR510 B SHUTTER PULSE CANCEL
VR508 B PEDESTAL
VR506 B GAMMA
VR1 IRIS GAIN
VR2 ANTI-CLOSE

VIDEO BOARD

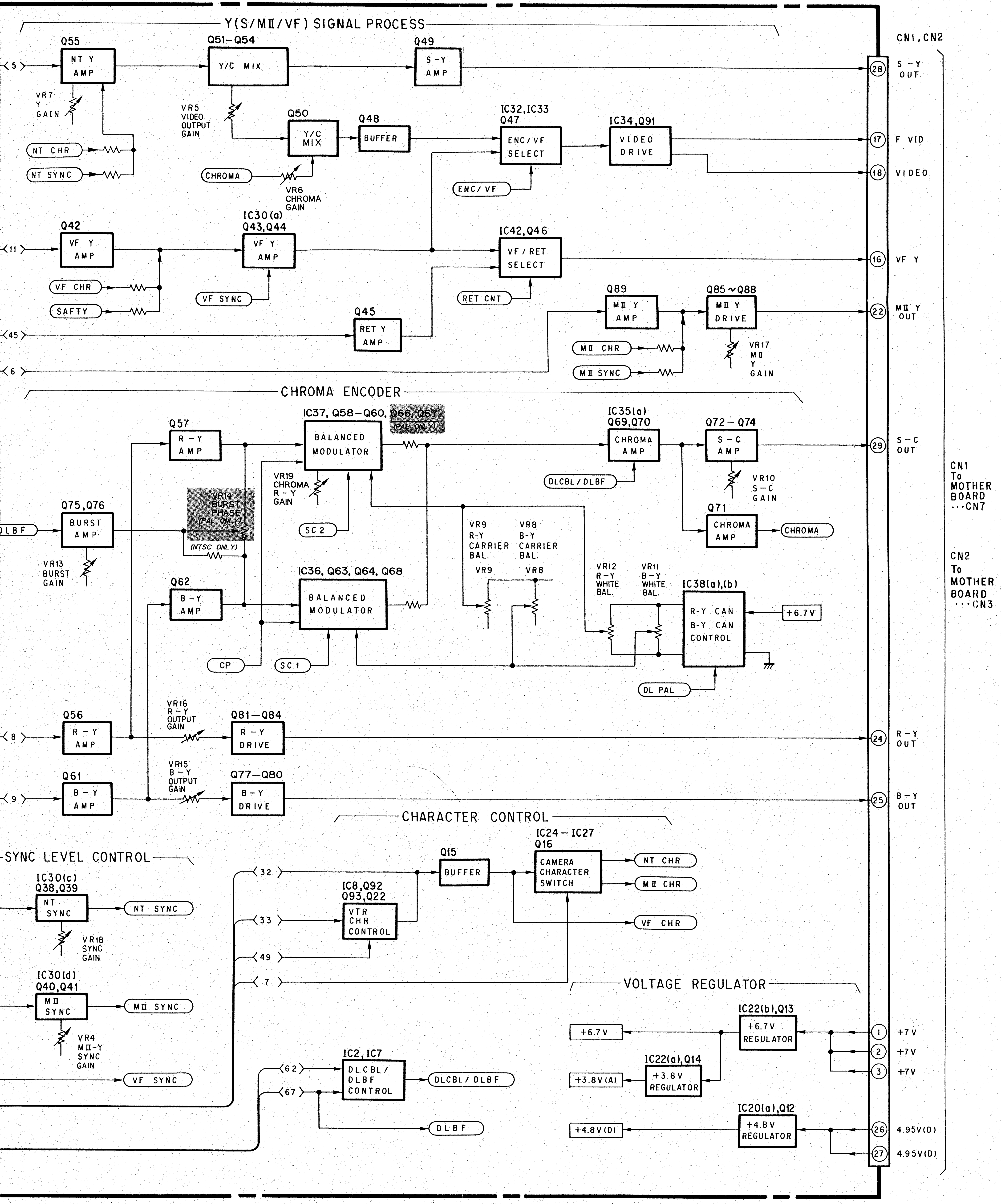

VR10 VIDEO LEVEL
VR9 S-VHS Y ADJ
VR7 G LEVEL
VR2 R-Y ADJ
VR6 MII Y ADJ
VR3 R LEVEL
VR5 B LEVEL
VR4 B-7 ADJ
VR8 S-VHS C ADJ

BLOCK DIAGRAM OF Sync

Block diagram of the Sync/Encoder Board have been corrected.


SYNC/ENCODER BOARD
CN1,CN2
NT Y
MII Y
R − Y
B − Y
VF Y
RET Y IN
ENC/VF
RET CNT
G/L IN
SC FINE
H PHASE
MPX IND
SC CRS 1
SC CRS 2
CN1 To MOTHER BOARD …CN7
CN2 To MOTHER BOARD …CN3
CP
VD
HD
ALC GATE
BF OUT
VS OUT
FLM
VBL
PAL
CBL OUT
PBL
DL PAL
C SYNC
NT SYNC
MII SYNC
VF SYNC
CAM CHR
VTR CHR
VCR CNT
BAR CAM
DLCBL
DLBF IN
GEN-LOCK SEPARATION
Q1
BUFFER
IC2(d)
Q3 − Q6
BURST AMP
TP3
(G/L BURST)
IC23
Q17,Q18
SC PHASE SHIFTER
TP8
(G/L BFP)
Q2
BURST GATE
IC1,IC2(a)
IC2(b),(c)
G/L SYNC SEPARATOR
TP1
(G/L SYNC)
TP2
(G/L V SYNC)
SYNC PULSE GENERATOR
IC4
IC50(a),IC51
IC3(a)
H PHASE CONTROL
G/L PC
G/L SYNC
VRS
GBS
Q8,Q9
INT/EXT CONTROL
G/L CRS1
G/L CRS2
TP5(INT/EXT)
INT/EXT
IEO
X4
EXT OSCILLATOR
HPI
TP4
(H.LOCK)
H.PD
Q7
INT/EXT CONTROL
+4.8V(D)
SW1
SW1 H.V BLANKING SWITCH
VBL SW1
VBL SW2
HB1
HB2
OSC/I
OSC/O
X5
CT3 INT
CT1 SC LOCK
L17 SC LOCK-1 (PAL ONLY)
SVO
SVI
(NTSC ONLY)
TP6 (SC LOCK)
IC44,IC45
SWITCHING GATE
SPD
X1
(PAL ONLY)
PAL
D2
IC5
CP PULSE DRIVE
PVO
PVI
TP10 (INTERLEAVING)
P. VD
X3
(PAL ONLY)
D4
CT2 INTERLEAVING
TP9 (SC)
IC31
BUFFER
SC1
SC 1
SC 2
PSO
CBL
CPBL
ALC
BFP
VS
FLM
VBL
Q18
REFERENCE VOLTAGE REGULATOR
G SC
IC2
C SYNC DRIVE
S1C
S2C
P2C
VR1 SC-H
VR2 QUAD
VR3 SUB QUAD (PAL ONLY)
Q55
NT AMP
VR7 Y GAIN
NT CHR
NT SYNC
Q42
VF AMP
VF CHR
SAFTY
Q75,Q
BURST AMP
DLBF
VR13 BURST GAIN
Q56
R − Y AMP
Q61
B − Y AMP
SYNC LEVEL
IC30(c)
Q38,Q39
NT SYNC
VR SYNC GAIN
IC30(d)
Q40,Q41
MII SYNC
VR4 MII-SYNC GAIN

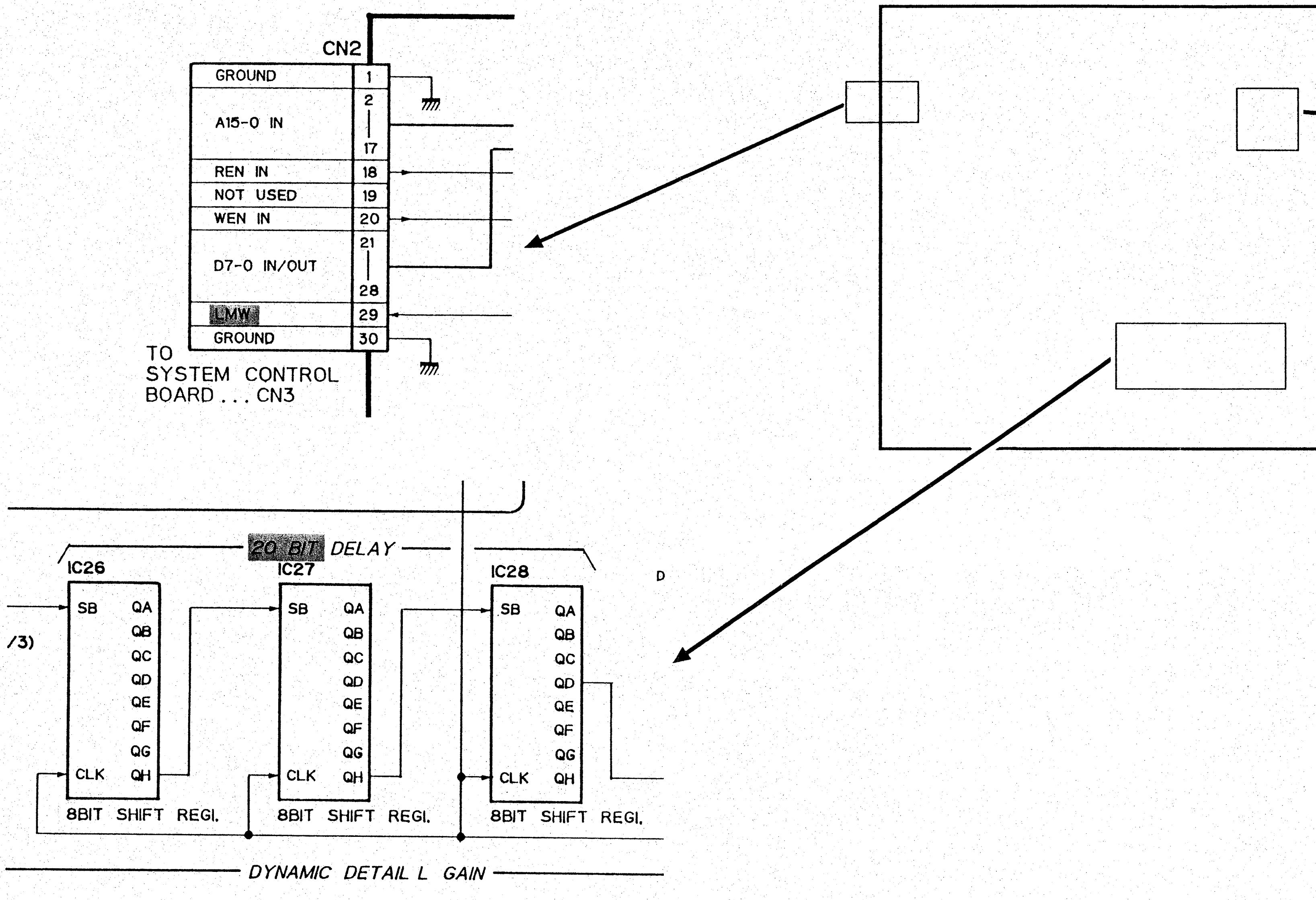
OF Sync/Encoder BOARD


Y(S/MII/VF) SIGNAL PROCESS
Q55
NT Y AMP
VR7 Y GAIN
NT CHR
NT SYNC
Q51–Q54
Y/C MIX
VR5 VIDEO OUTPUT GAIN
Q49
S–Y AMP
Q50
Y/C MIX
CHROMA
VR6 CHROMA GAIN
Q48
BUFFER
IC32,IC33 Q47
ENC/VF SELECT
ENC/VF
IC34,Q91
VIDEO DRIVE
Q42
VF Y AMP
VF CHR
SAFTY
IC30(a) Q43,Q44
VF Y AMP
VF SYNC
IC42,Q46
VF/RET SELECT
RET CNT
Q45
RET Y AMP
Q89
MII Y AMP
MII CHR
MII SYNC
Q85~Q88
MII Y DRIVE
VR17 MII Y GAIN
5
11
45
6
CHROMA ENCODER
Q57
R–Y AMP
IC37, Q58–Q60, Q66, Q67
(PAL ONLY)
BALANCED MODULATOR
VR19 CHROMA R–Y GAIN
SC 2
Q75,Q76
BURST AMP
DLBF
VR13 BURST GAIN
VR14 BURST PHASE (PAL ONLY)
(NTSC ONLY)
Q62
B–Y AMP
IC36, Q63, Q64, Q68
BALANCED MODULATOR
CP
SC 1
VR9 R-Y CARRIER BAL.
VR8 B-Y CARRIER BAL.
VR9
VR8
VR12 R–Y WHITE BAL.
VR11 B–Y WHITE BAL.
IC38(a),(b)
R-Y CAN B-Y CAN CONTROL
+6.7V
DL PAL
IC35(a) Q69,Q70
CHROMA AMP
DLCBL/DLBF
Q72–Q74
S–C AMP
VR10 S–C GAIN
Q71
CHROMA AMP
CHROMA
Q56
R–Y AMP
8
VR16 R–Y OUTPUT GAIN
Q81–Q84
R–Y DRIVE
Q61
B–Y AMP
9
VR15 B–Y OUTPUT GAIN
Q77–Q80
B–Y DRIVE
CHARACTER CONTROL
IC24–IC27 Q16
CAMERA CHARACTER SWITCH
Q15
BUFFER
NT CHR
MII CHR
VF CHR
IC8,Q92 Q93,Q22
VTR CHR CONTROL
32
33
49
7
SYNC LEVEL CONTROL
IC30(c) Q38,Q39
NT SYNC
NT SYNC
VR18 SYNC GAIN
IC30(d) Q40,Q41
MII SYNC
MII SYNC
VR4 MII-Y SYNC GAIN
VF SYNC
IC2, IC7
DLCBL/ DLBF CONTROL
DLCBL/ DLBF
DLBF
62
67
VOLTAGE REGULATOR
IC22(b),Q13
+6.7V REGULATOR
+6.7V
IC22(a),Q14
+3.8V REGULATOR
+3.8V(A)
IC20(a),Q12
+4.8V REGULATOR
+4.8V(D)
CN1, CN2
28 S–Y OUT
17 F VID
18 VIDEO
16 VF Y
22 MII Y OUT
29 S–C OUT
24 R–Y OUT
25 B–Y OUT
1 +7V
2 +7V
3 +7V
26 4.95V(D)
27 4.95V(D)
CN1 To MOTHER BOARD ···CN7
CN2 To MOTHER BOARD ···CN3

BLOCK DIAGRAM OF DIGITAL

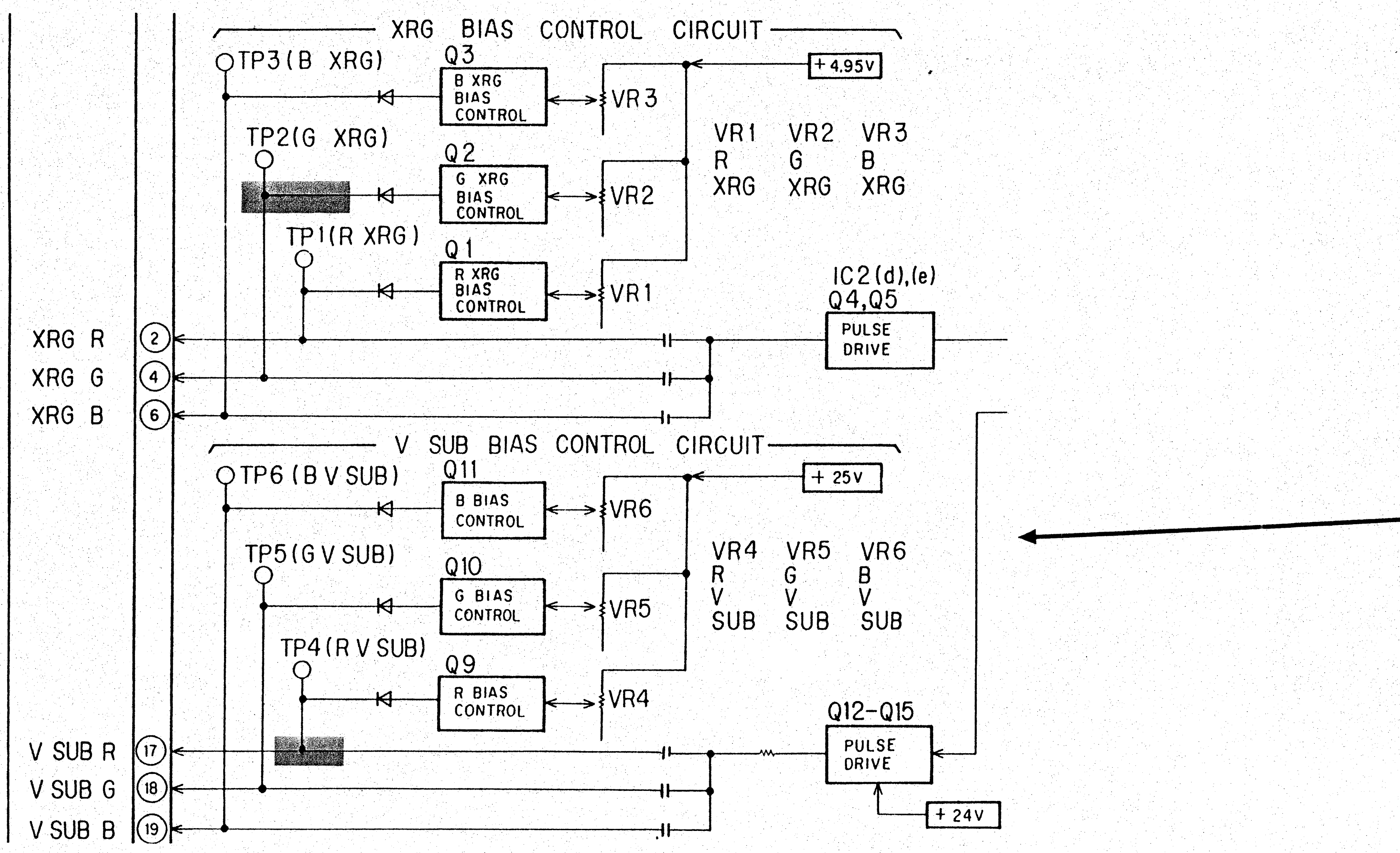
Block diagram of the Digital Process Board have been corrected.

DIGITAL PROCESS BOARD

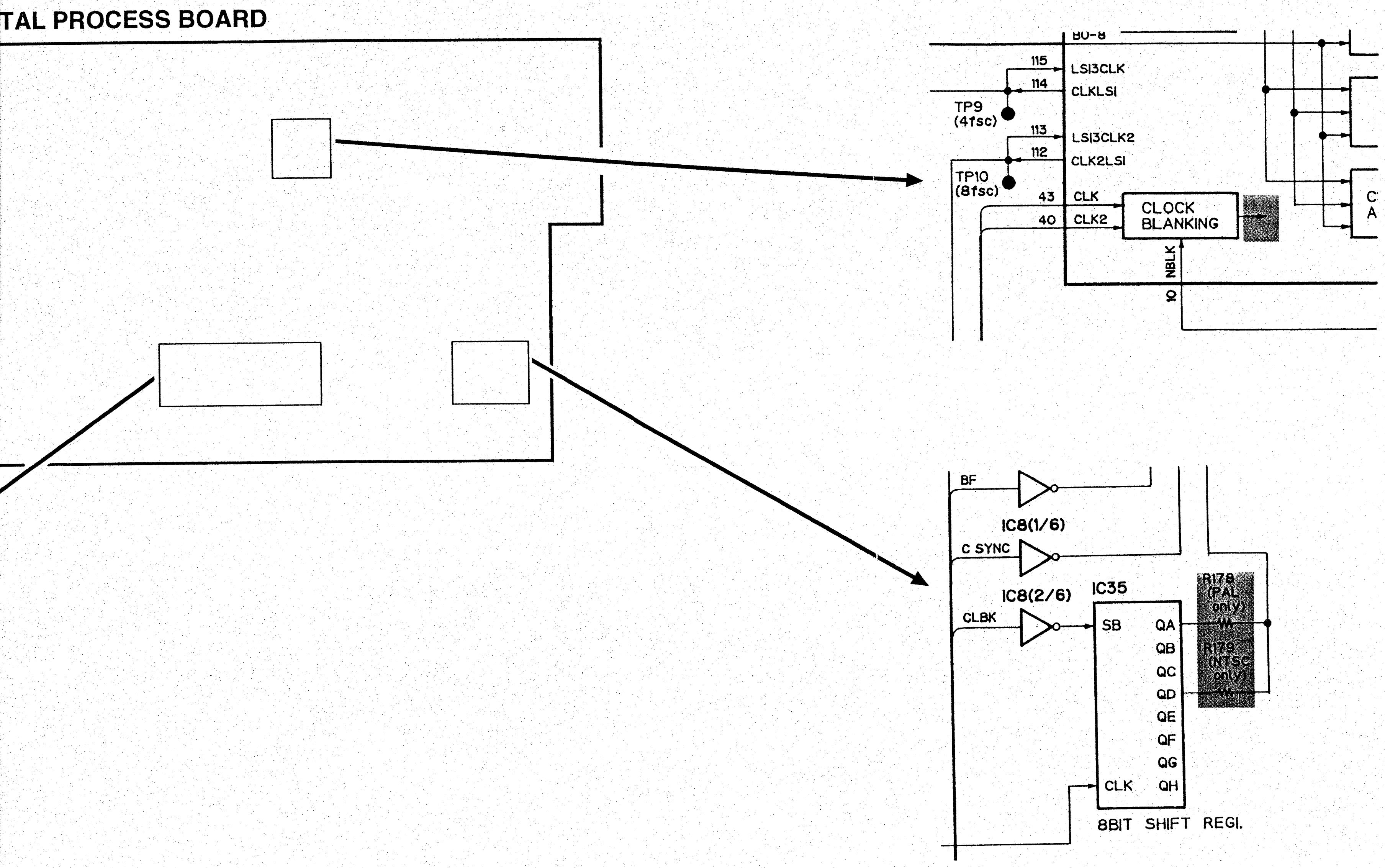

CN2
GROUND 1
A15-0 IN 2 17
REN IN 18
NOT USED 19
WEN IN 20
D7-0 IN/OUT 21 28
LMW 29
GROUND 30
TO SYSTEM CONTROL BOARD . . . CN3
20 BIT DELAY
IC26
IC27
IC28
SB
QA
QB
QC
QD
QE
QF
QG
QH
CLK
/3)
8BIT SHIFT REGI.
8BIT SHIFT REGI.
8BIT SHIFT REGI.
D
DYNAMIC DETAIL L GAIN

BLOCK DIAGRAM OF D

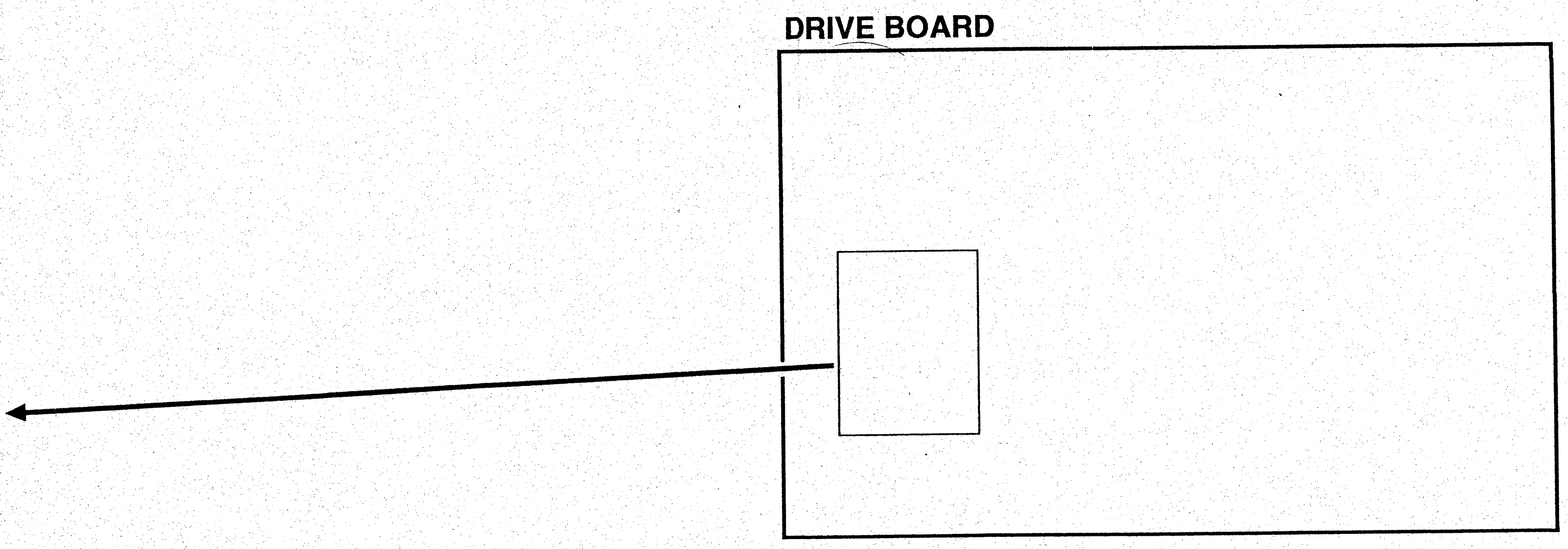
Block diagram of the Drive Board have been corrected.


XRG BIAS CONTROL CIRCUIT
TP3 (B XRG)
Q3
B XRG BIAS CONTROL
VR3
+4.95V
TP2 (G XRG)
Q2
G XRG BIAS CONTROL
VR2
VR1 R XRG
VR2 G XRG
VR3 B XRG
TP1 (R XRG)
Q1
R XRG BIAS CONTROL
VR1
IC2 (d),(e) Q4,Q5
PULSE DRIVE
XRG R ②
XRG G ④
XRG B ⑥
V SUB BIAS CONTROL CIRCUIT
TP6 (B V SUB)
Q11
B BIAS CONTROL
VR6
+ 25V
TP5 (G V SUB)
Q10
G BIAS CONTROL
VR5
VR4 R V SUB
VR5 G V SUB
VR6 B V SUB
TP4 (R V SUB)
Q9
R BIAS CONTROL
VR4
Q12–Q15
PULSE DRIVE
+ 24V
V SUB R ⑰
V SUB G ⑱
V SUB B ⑲

AGRAM OF DIGITAL PROCESS BOARD


TAL PROCESS BOARD
BU-8
115
114
113
112
43
40
LSI3CLK
CLKLSI
LSI3CLK2
CLK2LSI
CLK
CLK2
TP9
(4fsc)
TP10
(8fsc)
CLOCK
BLANKING
NBLK
10
C
A
BF
IC8(1/6)
C SYNC
IC8(2/6)
CLBK
IC35
SB
CLK
QA
QB
QC
QD
QE
QF
QG
QH
R178
(PAL
only)
R179
(NTSC
only)
8BIT SHIFT REGI.

CK DIAGRAM OF DRIVE BOARD


DRIVE BOARD

ORDER NO. AVS9312809S8

Service Manual

Colour Video Camera

WV-F500E Series
WV-F700AE Series

Supplement-3

Please file and use this supplement service manual together with original service manual for Model No. WV-F500E series order No. AVS9301642C8 and service manual for Model No. WV-F700AE series order No. AVS9212619C8.

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■ Circuit Description

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3. Drive Board 5
4. Preamplifier Board 6
5. Preprocess Board 7
6. Digital Process Board 8
7. Sync/Encoder Board 16
8. System Control Board 18
9. Camera Adaptor 22

Panasonic

CIRCUIT DESCRIPTION

1. Outline of Digital Signal Processing Color Camera

The object light entering camera is focussed by the zoom lens. Then light is supplied to the Prism Block through the CC Filter (Color Temperature Conversion Filter), Optical Low Pass Filter and the IR Cut Filter.

The Prism Block divides the incoming light to the Red, Green and Blue lights, and supplies the Red light to the R-CCD, Green light to the G-CCD and Blue light to the B-CCD.

The R, G and B-CCD converts the light into electric signals and supplies these converted signals to the Preamplifier Board.

The CCD is drived by the CCD drive pulse of Horizontal and Vertical which are supplied from the Drive Board. These drive pulses are made by Sync Signal inside the camera and they are synchronized with the Synchronizing System of Television Format.

The supplied R, G and B signals in the Preamplifier Board is supplied to CDS (Correlated Double Sampling Hold) circuit.

The CDS circuit remove the noise component from the output signal of CCD and the pure signal without noise is supplied to the Preprocess Board.

The supplied video signal is corrected such as Black Shading, White Shading, Gain, Pedestal and Gamma by correction signals from the System control board.

This corrected signal is supplied to the DSP (Digital Signal Processing) Board.

In the DSP Board, the analog signal from the Preprocess Board is converted to the 8-bit Digital signal by the A/D Converter.

The Digital signal is supplied to the DSP circuit composed by the LSI.

In the DSP circuit, Digital signal, Gamma, Knee, Masking, White Clip, Matrix, 2-Dimensional Low Pass Filter and Chroma Aperture are corrected, and supplied to the D/A Converter.

These DSP is controlled by the microcomputer in the System Control Board.

The Sync/Encoder board is divided into the Sync Pulse Generator circuit and the Encoder circuit. In the Sync Generator circuit, the 4fsc (4 times frequency of sub carrier) is generated by the Crystal Oscillator and is supplied to Sync Pulse Generator IC.

In the Sync Pulse Generator circuit, the video standard signal is generated.

When the External Gen-Lock signal is supplied, the video standard signal is synchronized with its signal.

In the Encoder circuit, standard video signal is generated from the Y, R-Y and B-Y, and video signal for viewfinder is mixed with the character signal, then sent to the viewfinder.

In the System Control Board, DSP control signal is produced by the microcomputer IC. And the correct data of Auto Black Balance, Auto White Balance, Flare, Auto Black Shading and Auto White Shading is detected by the microcomputer and is supplied to the Preprocess Board.

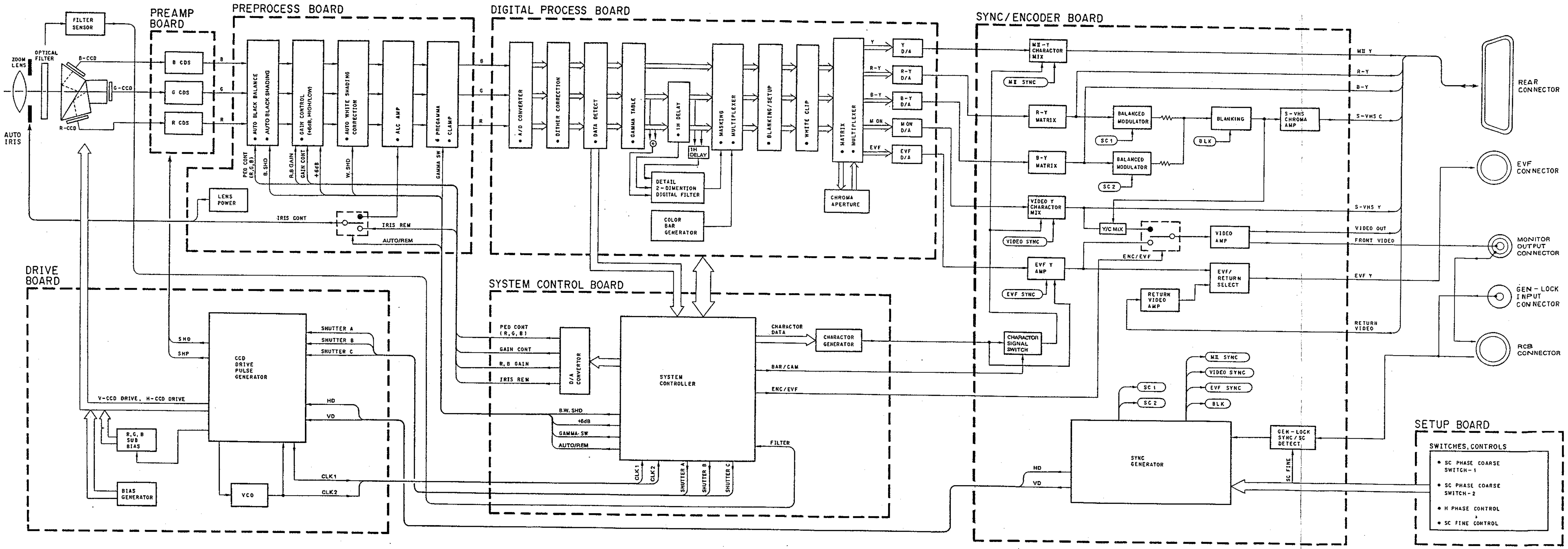
In the Power board, the rectified voltages by the switching regulator circuit is made from the unregulated 12V DC and supplied to each board.

In the Camera Adaptor, the Output Video signal is selected such as Composite, Y/C, R/G/B and Y/R-Y(PR)/B-Y(PB) signal.

The Intercom circuit of two-way system in the Camera Adaptor is used for the communication with the RCU.

The Camera Adaptor has the multiplexed control data for the MPX (Multiplex Communication System) and the demodulator circuit of the Gen-Lock video signal and the control data from the RCU side.

therefore the MPX is available by the connection of coaxial cable.


PREAMP BOARD
PREPROCESS BOARD
DIGITAL PROCESS BOARD
SYNC/ENCODER BOARD
DRIVE BOARD
SYSTEM CONTROL BOARD
SETUP BOARD
FILTER SENSOR
ZOOM LENS
OPTICAL FILTER
B-CCD
G-CCD
R-CCD
AUTO IRIS
B CDS
G CDS
R CDS
B
G
R
• AUTO BLACK BALANCE
• AUTO BLACK SHADING
• GAIN CONTROL (+6dB, HIGH/LOW)
• AUTO WHITE SHADING CORRECTION
• ALC AMP
• PREGAMMA
• CLAMP
PED CONT (R,G,B)
B.SHD
R.B GAIN
GAIN CONT
+6dB
W.SHD
GAMMA SW
LENS POWER
IRIS CONT
IRIS REM
AUTO/REM
• A/D CONVERTER
• DITHER CORRECTION
• DATA DETECT
• GAMMA TABLE
• 1H DELAY
1H DELAY
DETAIL 2-DIMENTION DIGITAL FILTER
COLOR BAR GENERATOR
• MASKING
• MULTIPLEXER
• BLANKING/SETUP
• WHITE CLIP
• MATRIX
• MULTIPLEXER
CHROMA APERTURE
Y
R-Y
B-Y
M ON
EVF
Y D/A
R-Y D/A
B-Y D/A
M ON D/A
EVF D/A
MII-Y CHARACTOR MIX
MII SYNC
R-Y MATRIX
B-Y MATRIX
BALANCED MODULATOR
BALANCED MODULATOR
SC1
SC2
BLANKING
BLK
S-VHS CHROMA AMP
VIDEO Y CHARACTOR MIX
VIDEO SYNC
Y/C MIX
VIDEO AMP
ENC/EVF
EVF Y AMP
EVF SYNC
EVF/ RETURN SELECT
RETURN VIDEO AMP
CHARACTOR SIGNAL SWITCH
MII SYNC
VIDEO SYNC
EVF SYNC
BLK
SC 1
SC 2
SYNC GENERATOR
GEN-LOCK SYNC/SC DETECT
SC FINE
HD
VD
MII Y
R-Y
B-Y
S-VHS C
S-VHS Y
VIDEO OUT
FRONT VIDEO
EVF Y
RETURN VIDEO
REAR CONNECTOR
EVF CONNECTOR
MONITOR OUTPUT CONNECTOR
GEN-LOCK INPUT CONNECTOR
RCB CONNECTOR
SWITCHES, CONTROLS
• SC PHASE COARSE SWITCH-1
• SC PHASE COARSE SWITCH-2
• H PHASE CONTROL
• SC FINE CONTROL
SHD
SHP
CCD DRIVE PULSE GENERATOR
SHUTTER A
SHUTTER B
SHUTTER C
V-CCD DRIVE, H-CCD DRIVE
HD
VD
R,G,B SUB BIAS
BIAS GENERATOR
VCO
CLK1
CLK2
PED CONT (R,G,B)
GAIN CONT
R,B GAIN
IRIS REM
D/A CONVERTOR
SYSTEM CONTROLLER
B.W. SHD
+6dB
GAMMA-SW
AUTO/REM
CHARACTOR DATA
CHARACTOR GENERATOR
BAR/CAM
ENC/EVF
FILTER
CLK1
CLK2
SHUTTER A
SHUTTER B
SHUTTER C

OUTLINE BLOCK DIAGRAM

2. CCD and Prism Block Assembly

2-1. CCD and Prism Block Assembly

The incoming light which contains the red(R), green(G) and blue(B) light enters to a prism through a zoom lens, a color temperature conversion (CC) filter, a natural density (ND) filter, crystal filter and an infrared (IR) cut filter.

The prism separates the incoming light into three primary color lights, R, G and B. The separated light respectively enters corresponding interline transfer (IT) CCD image sensor to convert it into the video signal.

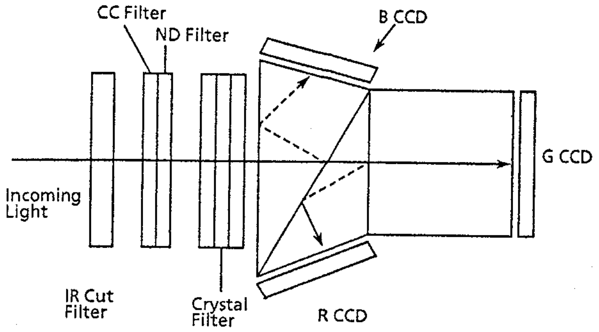


Fig.2-1. Prism Assembly and CCD Image Sensor

2-1-1. Infrared Cut Filter

The CCD image sensor has some sensitivity in the infrared region beyond the visible range.

The infrared (IR) cut filter cuts off the infrared light rays which the human eye does not see as light. If the color signal is made by using the video signal corresponding to the infrared rays which the human eye can not normally see, the colors of pictures on the monitor and that seen with the naked eye would differ substantially.

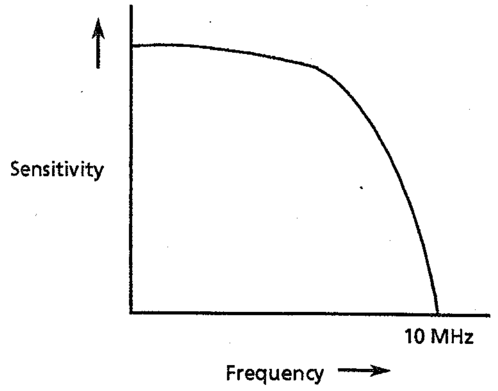


Fig.2-1-1. IR Cut Filter Response

2-1-2. Color Temperature Conversion (CC) Filter and Natural Density (ND) Filter

The CC and ND filters are built in a four-position wheel as shown below and according to the intensity and the color temperature of light illuminates an object.

2-1-3. Crystal Filter

The crystal filter is an optical low pass filter to prevent the high frequency image entering to the CCD image sensor in order to eliminates the false signal, i.e., moire, generated by interference between the pixel of the CCD image sensor and the object.

2-2. Sensor Board

2-2-1. WV-F500

The CCD image sensor IC101(R) <IC201(G), IC301(B)> receives CCD drive pulses such as vertical drive pulses øV1, øV2, øV3 and øV4, horizontal drive pulses øH1 and øH2, and reset pulse RG.

The horizontal drive pulses are supplied to pins 19 and 20 of IC101(R) <IC201(G), IC301(B)> from pins 16 and 17 of IC3 on the drive board through øH pulse driver IC203 on the sensor board.

The CCD reset pulse RG is supplied to pin 17 of IC101(R) <IC201(G), IC301(B)> from pin 12 of IC3 through reset pulse driver IC2(c),(d), Q4, Q5, Q6 and Q7 on the drive board.

Then the incoming light received by the CCD image sensor is converted to the prevideo signal controlled by these pulses. The R, G and B prevideo signals corresponded with the incoming light are then obtained at the base of buffer Q101(R) <Q201(G), Q301(B)>.

Thus the R, G and B prevideo signals are supplied to the preamplifier board through connectors CN101, CN2 and CN3.

2-2-2. WV-F700A

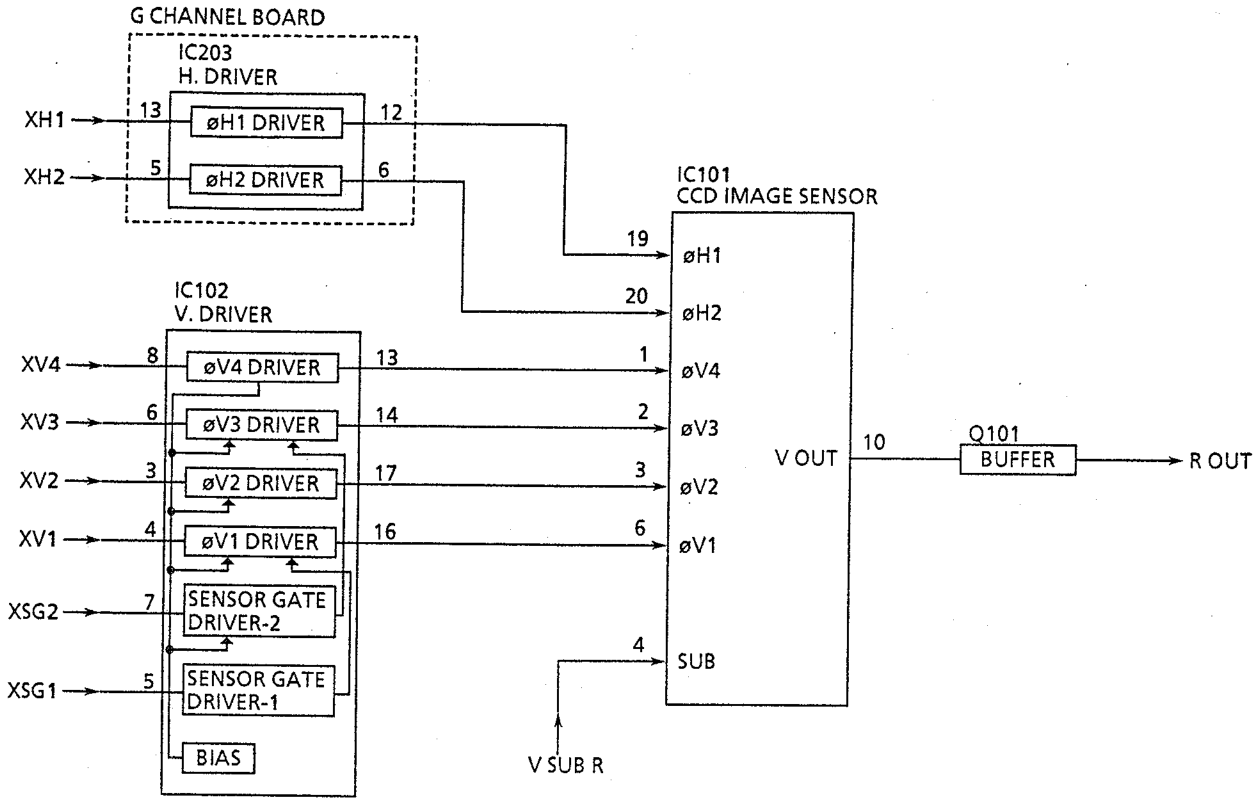
The CCD image sensor IC101(R) <IC201(G), IC301(B)> receives CCD drive pulses such as vertical drive pulses øV1, øV2, øV3 and øV4, horizontal drive pulses øH1 and øH2 and reset pulse PG.

The horizontal drive pulses are supplied to pins 19 and 18 of IC101(R) <IC201(G), IC301(B)> through pins 5 and 7 of IC103(R) <IC203(G), IC303(B)> on the Sensor board from the drive board.

The CCD reset pulse PG is supplied to pin 16 of IC101(R) <IC201(G), IC301(B)> from collector of Q202 through reset pulse driver Q202, Q203, Q204 and Q205 on the sensor board.

Then the incoming light received by the CCD image sensor is converted to the prevideo signal controlled by these pulses. The R, G and B prevideo signals corresponded with the incoming light are then obtained at the base of buffer Q101(R) <Q201(G), Q301(B)>.

Thus the R, G and B prevideo signals are supplied to the preamplifier board through connectors CN1, CN2 and CN3.



Horiontal & Vertical Drive Pulse Generator Circuit (R channel)

2-3. CCD Image Sensor

The CCD image sensor used in both camera is an interline transfer IT-CCD.

The pin identification of CCD image sensor (1/2" IT CCD) for WV-F500 is as follows.

Pin No	Name	In/Out	Description
1	Vø4	In	V Transfer Pulse 4
2	Vø3	In	V transfer Pulse 3
3	Vø2	In	V transfer Pulse 2
4	SUB	In	Substratum(Over Flow Drain)
5	GND	In	Ground
6	Vø1	In	V Transfer Pulse 1
7	VL	In	Protection Bias
8	GND	In	Ground
9	VDD	In	Output Amplifier Drain Power
10	VOUT	Out	Prevideo Output
11	VGG	In	Output Amplifier Gate Bias
12	NC	---	Not Used
13	VSS	In	Output Amplifier Source
14	GND	In	Ground
15	GND	In	Ground
16	RD	In	Reset Drain Pulse
17	RG	In	Reset Gate Pulse
18	LHø1	In	Final H Transfer Pulse
19	Hø1	In	H Transfer Pulse 1
20	Hø2	In	H Transfer Pulse 2

The pin identification of CCD image sensor (2/3" IT CCD) for WV-F700A is as follows.

Pin No	Name	In/Out	Description
1	Vø4	In	V Transfer Pulse 4
2	Vø3	In	V transfer Pulse 3
3	Vø2	In	V transfer Pulse 2
4	SUB	In	Substratum(Over Flow Drain)
5	GND	In	Ground
6	Vø1	In	V Transfer Pulse 1
7	VL	In	Protection Bias
8	NC	---	Not Used
9	NC	---	Not Used
10	VDD	In	+15V DC Power
11	VOUT	Out	Prevideo Output
12	VGG	In	Output Amplifier Gate Bias
13	VSS	In	Output Amplifier Source
14	GND	In	Ground
15	PD	In	Precharged Drain Bias
16	PG	In	Output Reset Pulse
17	VL	In	Protection Transistor Bias
18	Hø2	In	H Transfer Pulse 2
19	Hø1	In	H Transfer Pulse 1
20	GND	---	Ground

3. Drive Board

3-1-1. CCD Drive Pulse Generator (WV-F500)

The CCD drive pulse generator IC3 receives vertical drive pulse(VD) from the pin 58 of IC4 (Sync Generator) on the Sync/Encoder board through invertor IC5(c) on the Drive board and the horizontal drive pulse(HD) from the pin 68 of IC4 through HD Pulse Control IC5(b). And the IC3 generates pulses for the CCD image sensor R, G and B.

3-1-2. CCD Drive Pulse Generator (WV-F700A)

The CCD drive pulse generator IC4 receives vertical drive pulse(VD) from the pin 58 of IC4 (Sync Generator) on the Sync/Encoder board through invertor IC10(C) on the Drive board and the horizontal drive pulse(HD) from the pin 68 of IC4 through HD Pulse Control IC37 on the Sync/Encoder board, and the IC4 generates pulses for the CCD image sensor R, G and B.

3-2. CCD Pulse Driver Circuit

3-2-1. CCD Pulse Driver Circuit (WV-F500)

This circuit amplifies the horizontal transfer pulses XH1 by IC2(b) and IC2(e), and XH2 by IC2(a),IC2(f).

3-2-2. CCD Pulse Driver Circuit (WV-F700A)

This circuit amplifies the horizontal transfer pulses XH1 by IC13, IC3(c) and IC3(d) for PAL <IC3(c), (d) for NTSC> and XH2 by IC14, IC3(a) and IC3(b) for PAL <IC3 (a), (b) for NTSC> which are controlled by IC15, IC16 and IC17 (XH1, XH2 Pulse Control).

3-3. Bias Control Circuit

3-3-1. Bias Control Circuit(WV-F500)

The DC bias voltage for R output gate <G output gate, B output gate> and R sub <G sub, B sub> is generated by R XRG (R Reset Pulse Gate) Bias Control Q1 <G XRG Bias Control by Q2, B XRG Bias Control by Q3> and R Sub Bias Control by Q9 <G Sub Bias Control by Q10 and B Sub Bias Control by Q11>.

3-3-2. Bias Control Circuit (WV-F700A)

The DC bias voltage for R output gate <G output gate, B output gate> is generated by R SUB bias control by Q2, <G SUB bias control by Q3 and B SUB bias control by Q4>.

3-4. Sample Hold Pulse Driver Circuit

3-4-1. Sample Hold Pulse Driver Circuit (WV-F500)

This circuits consisting of IC1(d),(e),(f) and IC12(d),(e),(f) for SHP <IC1(a),(b),(c) and IC12(a),(b),(c) for SHD> and received SHP(Sample Hold Precharge) from pin 3 of IC3, SHD(Sample Hold Data Pulse) from pin 2 of IC3.

This circuit controls the sample hold pulse SHP(Sample Hold Precharge) and SHD(Sample Hold Data Pulse). The SHP and SHD pulses are controlled by sample hold pulse driver IC1 and IC12 and these pulses are supplied to preamplifier board through connector CN2.

3-4-2. Sample Hold Pulse Driver Circuit (WV-F700A)

This circuits consisting of IC2(a),(e),(f) for SHP <IC2(b),(c),(d) for SHD> and received SHP from pin 5 of IC4, and SHD from pin 2 of IC4.

This circuit controls the sample hold pulse SHP(Sample Hold Precharge) and SHD(Sample Hold Data Pulse). The SHP and SHD pulses are controlled by sample hold pulse driver IC2 and these pulses are supplied to preamplifier board through connector CN4(E2).

3-5. Voltage Regulator Circuit (WV-F500)

3-5-1. +15V DC Regulator Circuit

The +15V DC voltage is generated by IC10(b), Q22 and Q23 using +15.5V DC voltage supplied from power board. The produced DC voltage is obtained at collector of Q22 and supplied to sensor board.

3-5-2 . +24V DC Regulator Circuit

The +24V DC voltage is generated by Q16 and Q17 using +25V DC voltage supplied from power board. The produced DC voltage is obtained at emitter of Q16 and supplied to V Sub Bias Control Circuit.

3-5-3. -8.6V DC Regulator Circuit

The -8.6V DC voltage is generated by IC10(d), Q18 and Q19 using -9V DC voltage supplied from power board. The produced DC voltage is obtained at collector of Q18 and supplied to sensor board.

3-6. Voltage Regulator Circuit(WV-F700A)

3-6-1. +15V DC Regulator Circuit

The +15V DC voltage is generated by IC7(b), Q9 and Q10 using +15.5V DC voltage supplied from power board. The produced DC voltage is obtained at collector of Q9 and supplied to sensor board.

3-6-2. +5V DC Regulator Circuit

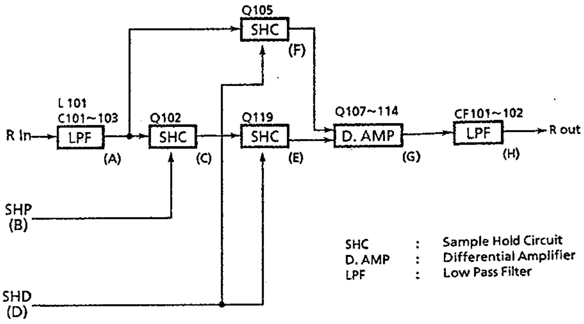
The +5V DC voltage is generated by IC7(a), Q11 and Q12 using +5.2V DC voltage supplied from power board. The produced DC voltage is obtained at collector of Q11 and supplied to sensor board.

4. Preamplifier Board

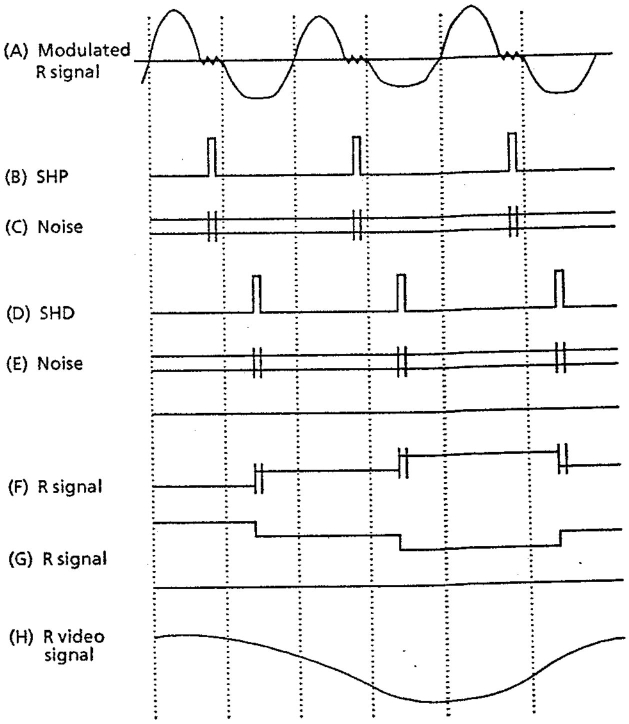
4-1. R Sample Hold Circuit(WV-F500, WV-F700A)

This circuit receives the modulated R signal from the R-CCD(IC101) which detects R signal.
The R signal (A) is fed through buffer Q101 to clamp circuit consists of Q102, R108, C107 and Q103 <Q102, R107, C105 and Q103 for WV-F700A> where the noise portion of modulated R signal is clamped by the sample hold pulse (SHP) (B) sent to the gate of Q102. The clamped video signal (C) is sent through buffer Q104 to sample hold circuit consisting of Q105, R114, C110 and Q106 <Q105, R111, C107 and Q106 for WV-F700A> where the video components (C) is gated by another sample hold pulse (SHD) (D) fed to the gate of Q105 and the video component (E) is made.
The video signal (E) then sent to one input of differential amplifier consisting of Q109, Q110 and Q111.

On the other hand, the noise signal (F) is sent to sample hold circuit consisting of Q119, R141, C118 and Q120 <Q119, R139, C117 and Q120> for WV-F700A where the noise signal is generated by the sample hold pulse (SHD) (D) fed to the gate of Q119. The noise signal (F) is then applied to the other input of differential amplifier where the R signal (E) and the noise (F) are subtracted each other and the noise mixed with the R signal (E) is removed. the R signal (G) thus obtained is sent to 10MHz low pass filter (LPF) CF102 <CF101 for WV-F700A>, and the R signal (H) is obtained.
The R signal is then sent to the preprocess circuit on the preprocess board through amplifier consisting of Q115 and Q116, E1, Mother board and CN14 <CN8 for WV-F700A>.



CDS (Correlative Double Sampling) Circuit



Correlated double sampling waveforms

4-2. G Sample Hold Circuit(WV-F500, WV-F700A)

This circuit receives the modulated G signal from the G CCD(IC201) which detects G signal.
A function of this circuit is the same manner as R sample hold circuit. but the reference numbers of the component parts are changed as follows.

Example: Q101->Q201
R101->R201
CF101->CF201

4-3. B Sample Hold Circuit(WV-F500, WV-F700A)

This circuit receives the modulated B signal from the B CCD(IC301) which detects B signal.
A function of this circuit is the same manner as R sample hold circuit. but the reference numbers of the component parts are changed as follows.

Example: Q101->Q301
R101->R301
CF101->CF301

5. Preprocess Board (WV-F500)

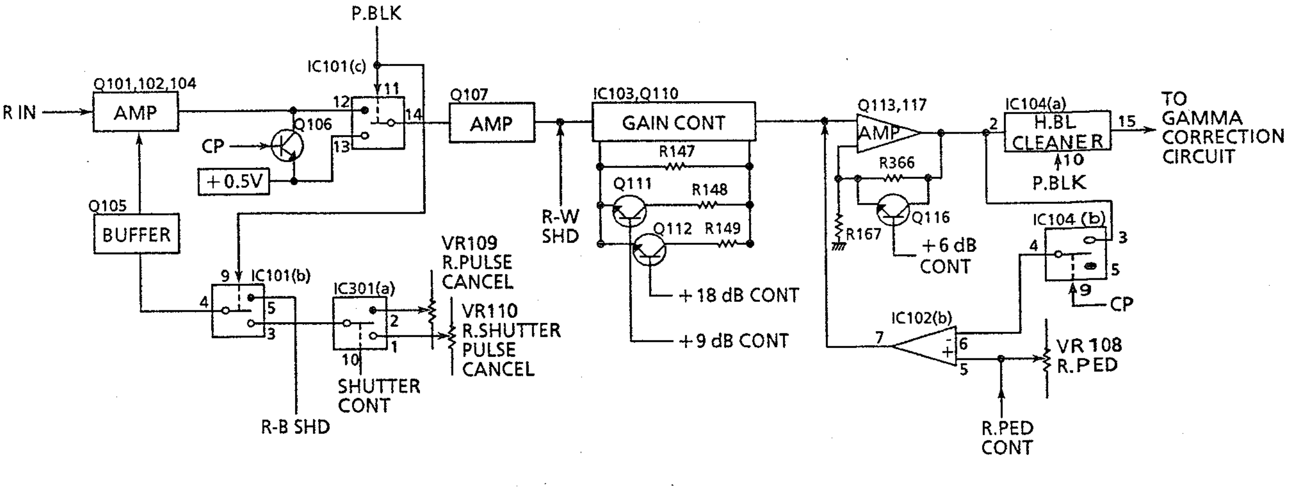
This circuit receives R, G and B signals from the preamplifier board and R, G and B signals are corrected in order to make video signal.

5-1. Shading Correction/Pulse Cancel Circuit

The R-BSHD (R Black Shading Correction Signal) is supplied to pin 5 of IC101(b), and R pulse cancel DC voltage and R shutter pulse cancel DC voltage are supplied to pin 2 and pin 1 of IC101(a). And Selected pulse cancel DC voltage obtained at pin 3 of IC101(b). The selected R-BSHD or R pulse cancel DC voltage (or R shutter pulse cancel) is obtained at pin 4 of IC101(b) which controlled by Shutter Control Pulse for IC101(a) and P.BLK pulse for IC101(b) and the selected signal is sent to the emitter of Q102 through the buffer Q105 in order to match the R pedestal level between Shutter On and Off.
The R pulse cancel DC voltage is controlled by VR109(R Pulse Cancel) and R shutter pulse cancel DC voltage is controlled by VR110(R Shutter Pulse Cancel).

5-2. High Gain Control/Gain Control Circuit

This circuit controls the level of the R signal by changing the gain of circuit when the camera gain is selected to 0dB, +6dB, +9dB, +15dB, +18dB or +24dB position by setting of Color Bar/+6dB/Camera Selection Switch(BAR/+6dB/CAMERA) and High Gain Selection Switch.


P.BLK
IC101(c)
Q101,102,104
R IN
AMP
12
11
14
Q106
13
CP
+0.5V
Q107
AMP
IC103,Q110
GAIN CONT
R147
Q111
R148
Q112
R149
R-W SHD
+18 dB CONT
+9 dB CONT
Q105
BUFFER
9
IC101(b)
4
5
3
IC301(a)
2
1
10
SHUTTER CONT
R-B SHD
VR109 R.PULSE CANCEL
VR110 R.SHUTTER PULSE CANCEL
Q113,117
AMP
R366
R167
Q116
+6 dB CONT
IC102(b)
7
6
5
VR108 R.PED
R.PED CONT
IC104(a)
2
H.BL CLEANER
15
10
P.BLK
IC104 (b)
4
3
5
9
CP
TO GAMMA CORRECTION CIRCUIT

Gain Control Circuit (R channel)

5-3. Pedestal Control Circuit

This circuit controls the pedestal level of R signal by adjusting VR108 (R PEDESTAL LEVEL). Setting by the RCU, the pedestal control DC from RCU is fed to pin 5 of IC102(b). The pedestal control DC is selected by this IC102(b).

5-4. Gamma Correction Circuit

5-4-1. G Signal Gamma Correction Circuit

The G signal from the horizontal blanking cleaner IC304(a) is send to G Signal Gamma Correction circuit which has a three step gamma correction.
The Gamma level is controlled by a set up menu.

5-5. ALC Signal Control Circuit

5-5-1. ALC Signal Control Circuit

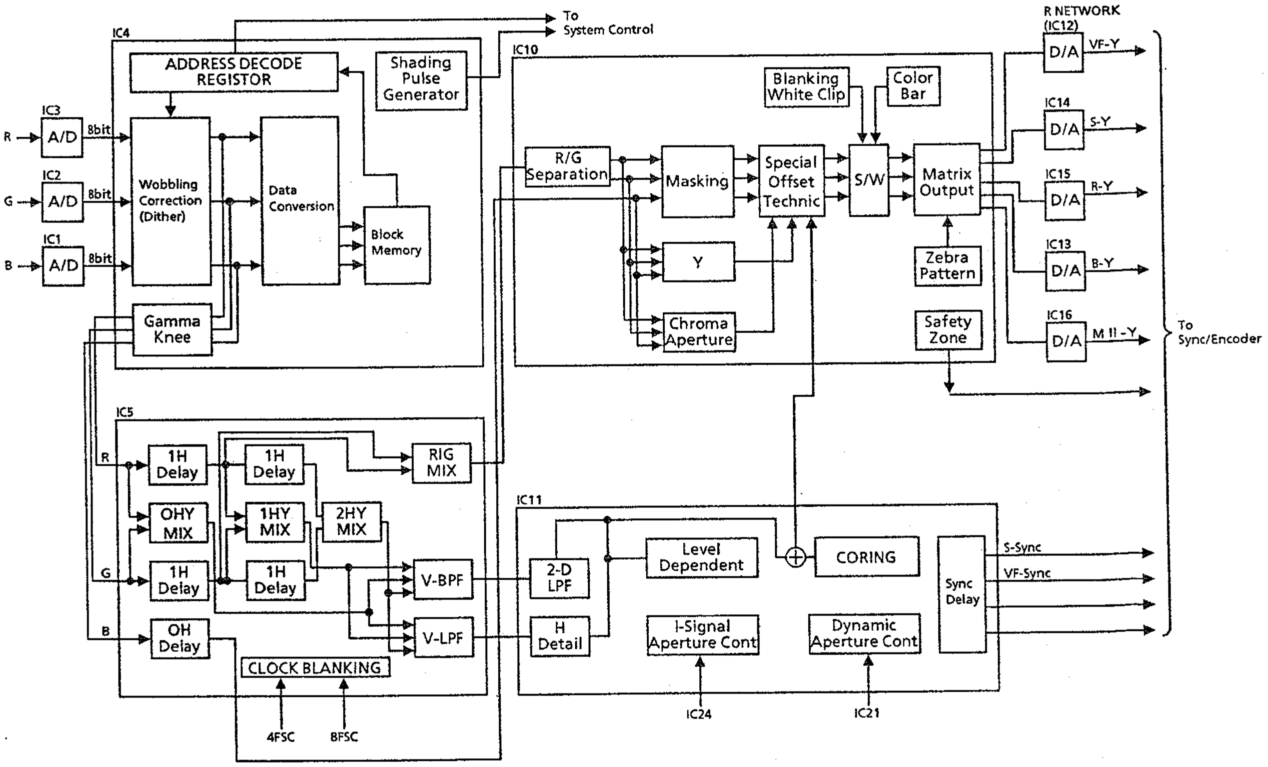
The R, G and B signals from the horizontal blanking cleaner IC104(a)<R>, <IC304(a)<G>, IC504(a)<B> are supplied to a peak detect and average circuits through buffer Q6. The ALG Gate pulse is supplied to IC12(c) (V Gate pulse 1/3 cut to pin 12, H&V Gate pulse<center> to pin 13) and Gate pulse is controlled by Gate control pulse which are controlled by a setup menu. The ALC P(Peak)/A(Average) control signal is select the Peak or Average detect by a setup menu. The selected Video signal is send to a IRIS control circuit through Iris gain.

6. Digital Process Board

The R, G and B analog signals coming from the Preprocess Board are sent to IC3, IC2 and IC1, then converted the analog to the 8 bit digital signal. These converted R, G and B signal are digitally processed in the IC4, IC5, IC10 and IC11 as follows.

(1)Wobbling (Dither Correction)
(2)Gamma Table/Auto Knee Circuit
(3)Matrix and Delay Lines
(4)Masking
(5)2-Dimensional Low Pass Filter
(6)Blanking/Black Clip
(7)White Clip
(8)Color Bar Generator
(9)Chroma Aperture

And the digital Y, R-Y and B-Y signals are converted to analog Y, R-Y and B-Y signals in the IC16, IC15, IC13, IC12 (R Network R405-R414, R416-R425 for WV-F500) and IC14.


To System Control
IC4
ADDRESS DECODE REGISTOR
Shading Pulse Generator
IC3
R
A/D
8bit
IC2
G
A/D
8bit
IC1
B
A/D
8bit
Wobbling Correction (Dither)
Data Conversion
Block Memory
Gamma Knee
IC10
R/G Separation
Masking
Y
Chroma Aperture
Blanking White Clip
Special Offset Technic
Color Bar
S/W
Matrix Output
Zebra Pattern
Safety Zone
R NETWORK (IC12)
D/A
VF-Y
IC14
D/A
S-Y
IC15
D/A
R-Y
IC13
D/A
B-Y
IC16
D/A
M II -Y
To Sync/Encoder
IC5
R
1H Delay
1H Delay
R/G MIX
OHY MIX
1HY MIX
2HY MIX
G
1H Delay
1H Delay
V-BPF
V-LPF
B
OH Delay
CLOCK BLANKING
4FSC
8FSC
IC11
2-D LPF
H Detail
Level Dependent
CORING
I-Signal Aperture Cont
Dynamic Aperture Cont
Sync Delay
S-Sync
VF-Sync
IC24
IC21

Block Diagram of Digital Process

6-1. Wobbling (Dither Correction)

The R, G and B analog signals from the Preprocess Board are converted to an 8-bit digital signals by IC1(B) <IC2(G), IC3(R)> respectively. 8 bit digital signals give sufficient resolution for most applications. But there may be false contours when the signal level and the rate of changing is low.
To prevent this effect, digital signal is changed from 8 bit to 9 bit in this Wobbling Circuit.
Then, 9 bit digital R, G and B signal sent to a Gamma/Knee Circuit and Data Conversion circuit in side of IC4

6-2. PDCV(Data Conversion)/Block Memory

The 8 bit signal is send to Block memory circuit for control the White and Black Shading after changed to 8 bit from 9 bit by PDCV(Data Conversion).

6-3. Gamma correction/Knee Circuit

The 9 bit digital R, G and B signals from the Wobbling(Dither correction) circuit supplied to gamma correction/Knee circuit in the PGRAM.

6-4. Mix and Delay Lines

The R and G signals supplied to Delay lines in the IC5 from the Gamma table and then the 0H(R+G)<Non Delayed R+G signal>, 1H(R+G)<1H Delayed R+G signal> and 2H(R+G)<2H Delayed R+G signal> signals are produced, Then these 3 signal are sent to V-BPF for the V aperture and V-LPF for H aperture.
The 1H(R) and 1H(G) signals are mixed in the RG MIX and sent to IC10.
The B signal supplied from Gamma table is sent to IC10 without delay.

6-5. Masking

This circuit is used to correct the difference in color reproduction and tint(phase) control that may occur with different lighting conditions and different types of camera.
The 1H(R)<1H Delayed R signal>, 1H(G)<1H Delayed G signal> and 0H(B)<Non Delayed B Signal> signals from the Mix and Delay Lines are sent the Masking Circuit.
Then, 6 different color correction signals are produced in the masking circuit, R-G, R-B, G-R, G-B, B-R and B-G. Then R-G and R-B signal are added to R signal, G-R and G-B signals are added to G signal, and B-R and B-G signals are added to B signal.

6-6. Enhancer Circuit

The Enhancer circuit consisting of following circuit in the IC5 and IC11.

- V-BPF : to make the Vertical Aperture Correction Signal from 0H(R+G), 1H(R+G) and 2H(R+G) then send to 2-Dimensional Band Pass Filter and V-Detail circuit.
- V-LPF : to make the Horizontal Aperture Correction Signal from 0H(R+G), 1H(R+G) and 2H(R+G) then send to H-Detail circuit
- 2-Dimensional Low Pass Filter : to remove cross color around 4.43(3.58)MHz component.
- H Detail : for select the H and L Band
- Level Dependent : to control the gain of signal which added the Horizontal and Vertical Detail.
- Coring : to remove the noise component of detail signal.

6-7. I-Signal Aperture Control

The I-Signal Aperture Control Circuit receives the control signal from I-Noise Suppress Control circuit which are consisting of Q6-Q12, Q15-Q18, IC24-IC28.
The I-Noise Suppress Control signal is delayed for 1.4usec to compensate the timing of video signal in the the IC26-IC28. Because, video signal passed through DSP (Digital Signal Processing) circuit then delayed 1.4usec.

6-8. Dynamic Aperture Control

The aperture is added to 4 corner of video signal on the monitor screen to improve peripheral resolution.

6-9. Sync Delay

The Sync Signal, Blanking Signal, Horizontal Drive Pulse, Vertical Drive Pulse and Burst Flag Pulse are delayed by sync delay circuit to compensate the timing of color signals.

6-10. Color bar / Frame (Safety Zone) / Zebra Pattern Generator

The Color bar signal and zebra pattern signals are produced in the IC10 and supplied to Output circuit in the IC10.
The Safety Zone and Center Marker are produced in the IC10 and supplied to emitter of Q42 on the Sync/Encoder Board to mixed with EVF Y signal. Then sent to EVF.

6-11. Video Output Circuit

6-11-1. Monitor (EVF Y) Signal Output Circuit

10 bit digital monitor signal is supplied to D/A converter (R Network) consisting of R405-R414, R416-R425 from pins 47-50 of IC10.
The converted analog monitor signal is supplied to Q42 on the Sync/Encoder Board to mixed with sync signal.

6-11-2. PAL Y Signal Output Circuit

10 bit digital PAL Y signal is supplied to D/A converter IC (IC14) from pins 61-70 of IC10.

The converted analog PAL Y signal is supplied to Q55 on the Sync/Encoder Board to mixed with sync signal.

6-11-3. R-Y Signal Output Circuit

10 bit digital R-Y signal is supplied to D/A converter IC (IC15) from pins 87-96 of IC10.
The converted analog R-Y signal is supplied to Q56 on the Sync/Encoder Board to produce C (Chrominance) Signal.

6-11-4. B-Y Signal Output Circuit

10 bit digital B-Y signal is supplied to D/A converter IC (IC13) from pins 73-82 of IC10.
The converted analog B-Y signal is supplied to Q61 on the Sync/Encoder Board to produce C (Chrominance) Signal.

6-11-5. M II Y Signal Output Circuit

10 bit digital M II Y signal is supplied to D/A converter IC (IC16) from pins 99-108 of IC10.
The converted analog M II Y signal is supplied to Q89 on the Sync/Encoder Board to mixed with sync signal.

The pin identification of IC4 is as follows.

Pin No.	Name	In/Out	Description
1	NC	---	Not Used
2	VDD	In	+5V DC Power
3	ROUT0	Out	Red Signal 0 Out
4	ROUT1	Out	Red Signal 1 Out
5	ROUT2	Out	Red Signal 2 Out
6	ROUT3	Out	Red Signal 3 Out
7	ROUT4	Out	Red Signal 4 Out
8	ROUT5	Out	Red Signal 5 Out
9	ROUT6	Out	Red Signal 6 Out
10	ROUT7	Out	Red Signal 7 Out
11	ROUT8	Out	Red Signal 8 Out
12	VDD	In	+5V DC Power
13	VSS	In	Ground
14	GOUT0	Out	Green Signal 0 Out
15	GOUT1	Out	Green Signal 1 Out
16	GOUT2	Out	Green Signal 2 Out
17	GOUT3	Out	Green Signal 3 Out
18	GOUT4	Out	Green Signal 4 Out
19	GOUT5	Out	Green Signal 5 Out
20	GOUT6	Out	Green Signal 6 Out
21	GOUT7	Out	Green Signal 7 Out
22	GOUT8	Out	Green Signal 8 Out
23	VDD	In	+5V DC Power
24	VSS	In	Ground
25	VSS	In	Ground
26	BOUT0	Out	Blue Signal 0 Out
27	BOUT1	Out	Blue Signal 1 Out
28	BOUT2	Out	Blue Signal 2 Out
29	BOUT3	Out	Blue Signal 3 Out
30	BOUT4	Out	Blue Signal 4 Out
31	BOUT5	Out	Blue Signal 5 Out
32	BOUT6	Out	Blue Signal 6 Out
33	BOUT7	Out	Blue Signal 7 Out
34	BOUT8	Out	Blue Signal 8 Out
35	WOBP	---	Not Used
36	NC	---	Not Used
37	NC	---	Not Used
38	VDD	In	+5V DC Power
39	VSS	In	Ground
40	BIN8	In	Blue Signal 8 In
41	BIN7	In	Blue Signal 7 In
42	BIN6	In	Blue Signal 6 In
43	BIN5	In	Blue Signal 5 In
44	BIN4	In	Blue Signal 4 In
45	BIN3	In	Blue Signal 3 In
46	BIN2	In	Blue Signal 2 In
47	BIN1	In	Blue Signal 1 In
48	BIN0	In	Blue Signal 0 In
49	VDD	In	+5V DC Power
50	VSS	In	Ground
51	GIN8	In	Green Signal 8 In
52	GIN7	In	Green Signal 7 In
53	GIN6	In	Green Signal 6 In
54	GIN5	In	Green Signal 5 In
55	GIN4	In	Green Signal 4 In
56	GIN3	In	Green Signal 3 In
57	GIN2	In	Green Signal 2 In
58	GIN1	In	Green Signal 1 In
59	GIN0	In	Green Signal 0 In
60	VSS	In	Ground
61	VDD	In	+5V DC Power
62	RIN8	In	Red Signal 8 In
63	RIN7	In	Red Signal 7 In
64	RIN6	In	Red Signal 6 In
65	RIN5	In	Red Signal 5 In
66	RIN4	In	Red Signal 4 In
67	RIN3	In	Red Signal 3 In
68	RIN2	In	Red Signal 2 In
69	RIN1	In	Red Signal 1 In
70	RIN0	In	Red Signal 0 In
71	VSS	In	Ground
72	NC	---	Not Used
73	NC	---	Not Used
74	VDD	In	+5V DC Power
75	ADD15	In	Address 15 In
76	ADD14	In	Address 14 In
77	ADD13	In	Address 13 In
78	ADD12	In	Address 12 In
79	ADD11	In	Address 11 In

80	ADD10	In	Address 10 In
81	ADD9	In	Address 9 In
82	ADD8	In	Address 8 In
83	ADD7	In	Address 7 In
84	ADD6	In	Address 6 In
85	ADD5	In	Address 5 In
86	ADD4	In	Address 4 In
87	ADD3	In	Address 3 In
88	ADD2	In	Address 2 In
89	ADD1	In	Address 1 In
90	ADD0	In	Address 0 In
91	VDD	In	+5V DC Power
92	VSS	In	Ground
93	RE	In	Read Enable In
94	WE	In	Write Enable In
95	VDD	In	+5V DC Power
96	VSS	In	Ground
97	DB7	In	Data 7 In
98	DB6	In	Data 6 In
99	DB5	In	Data 5 In
100	DB4	In	Data 4 In
101	DB3	In	Data 3 In
102	DB2	In	Data 2 In
103	DB1	In	Data 1 In
104	DB0	In	Data 0 In
105	LMW	In	LMW
106	CHIP3	Out	Chip(IC) Select Out
107	CHIP4	Out	Chip(IC) select Out
108	NC	---	Not Used
109	NC	---	Not Used
110	VSS	In	Ground
111	CS1	Out	White Shading Memory Chip(IC) Select Out
112	CS0	Out	Black Shading Memory Chip(IC) Select Out
113	CW1	Out	White Shading Memory Write Enable Chip(IC) Select Out
114	CW0	Out	Black Shading Memory Write Enable Chip(IC) Select Out
115	SCLK	Out	Shading Memory Read Clock Out
116	VDD	In	+5V DC Power
117	VSS	In	Ground
118	SAD14	Out	Shading Memory Address 14 Out
119	SAD13	Out	Shading Memory Address 13 Out
120	SAD12	Out	Shading Memory Address 12 Out
121	SAD11	Out	Shading Memory Address 11 Out
122	SAD10	Out	Shading Memory Address 10 Out
123	SAD9	Out	Shading Memory Address 9 Out
124	SAD8	Out	Shading Memory Address 8 Out
125	SAD7	Out	Shading Memory Address 7 Out
126	VDD	In	+5V DC Power
127	VDD	In	+5V DC Power
128	SAD6	Out	Shading Memory Address 6 Out
129	SAD5	Out	Shading Memory Address 5 Out
130	SAD4	Out	Shading Memory Address 4 Out
131	SAD3	Out	Shading Memory Address 3 Out
132	SAD2	Out	Shading Memory Address 2 Out
133	SAD1	Out	Shading Memory Address 1 Out
134	SAD0	Out	Shading Memory Address 0 Out
135	VSS	In	Ground
136	VBLK	In	Vertical Blanking Pulse In
137	HD	In	Horizontal Drive Pulse In
138	VD	In	Vertical Drive Pulse In
139	F	Out	Field Pulse Out
140	VDD	In	+5V DC Power
141	VSS	In	Ground
142	CLK	In	4fsc(PAL:17.7MHz, NTSC:14.5MHz) Clock In
143	NC	---	Not Used for WV-F500, Ground for WV-F700A
144	NC	---	Not Used

The pin identification of IC5 is as follows.

Pin No.	Name	In/Out	Description
1	VDD	In	+5V DC Power
2	VSS	In	Ground
3	VDD	In	+5V DC Power
4	VSS	In	Ground
5	VDD	In	+5V DC Power
6	VSS	In	Ground
7	RGO0	Out	Red/Green Time Division Signal 0 Out
8	RGO1	Out	Red/Green Time Division Signal 1 Out
9	RGO2	Out	Red/Green Time Division Signal 2 Out
10	RGO3	Out	Red/Green Time Division Signal 3 Out
11	RGO4	Out	Red/Green Time Division Signal 4 Out
12	RGO5	Out	Red/Green Time Division Signal 5 Out
13	RGO6	Out	Red/Green Time Division Signal 6 Out

14	RGO7	Out	Red/Green Time Division Signal 7 Out
15	RGO8	Out	Red/Green Time Division Signal 8 Out
16	VDD	In	+5V Dc Power
17	VSS	In	Ground
18	VDD	In	+5V DC Power
19	VSS	In	Ground
20	BO0	Out	Blue Signal 0 Out
21	BO1	Out	Blue Signal 1 Out
22	BO2	Out	Blue Signal 2 Out
23	BO3	Out	Blue Signal 3 Out
24	BO4	Out	Blue Signal 4 Out
25	BO5	Out	Blue Signal 5 Out
26	BO6	Out	Blue Signal 6 Out
27	BO7	Out	Blue Signal 7 Out
28	BO8	Out	Blue Signal 8 Out
29	VDD	In	+5V DC Power
30	VSS	In	Ground
31	BIN8	In	Blue Signal 8 In
32	BIN7	In	Blue Signal 7 In
33	BIN6	In	Blue Signal 6 In
34	BIN5	In	Blue Signal 5 In
35	BIN4	In	Blue Signal 4 In
36	BIN3	In	Blue Signal 3 In
37	BIN2	In	Blue Signal 2 In
38	BIN1	In	Blue Signal 1 In
39	BIN0	In	Blue Signal 0 In
40	VSS	In	Ground
41	VDD	In	+5V DC Power
42	GIN8	In	Green Signal 8 In
43	GIN7	In	Green Signal 7 In
44	GIN6	In	Green Signal 6 In
45	GIN5	In	Green Signal 5 In
46	GIN4	In	Green Signal 4 In
47	GIN3	In	Green Signal 3 In
48	GIN2	In	Green Signal 2 In
49	GIN1	In	Green Signal 1 In
50	GIN0	In	Green Signal 0 In
51	VSS	In	Ground
52	VDD	In	+5V DC Power
53	RIN8	In	Red Signal 8 In
54	RIN7	In	Red Signal 7 In
55	RIN6	In	Red Signal 6 In
56	RIN5	In	Red Signal 5 In
57	RIN4	In	Red Signal 4 In
58	RIN3	In	Red Signal 3 In
59	RIN2	In	Red Signal 2 In
60	RIN1	In	Red Signal 1 In
61	RIN0	In	Red Signal 0 In
62	VSS	In	Ground
63	VDD	In	+5V DC Power
64	VBP9	Out	Y Signal V.BPF 9 Out
65	VBP8	Out	Y Signal V.BPF 8 Out
66	VBP7	Out	Y Signal V.BPF 7 Out
67	VBP6	Out	Y Signal V.BPF 6 Out
68	VBP5	Out	Y Signal V.BPF 5 Out
69	VBP4	Out	Y Signal V.BPF 4 Out
70	VBP3	Out	Y Signal V.BPF 3 Out
71	VBP2	Out	Y Signal V.BPF 2 Out
72	VBP1	Out	Y Signal V.BPF 1 Out
73	VBP0	Out	Y Signal V.BPF 0 Out
74	VDD	In	+5V DC Power
75	VSS	In	Ground
76	VLP9	Out	Y Signal V.LPF 9 Out
77	VLP8	Out	Y Signal V.LPF 8 Out
78	VLP7	Out	Y Signal V.LPF 7 Out
79	VLP6	Out	Y Signal V.LPF 6 Out
80	VLP5	Out	Y Signal V.LPF 5 Out
81	VSS	In	Ground
82	VDD	In	+5V DC Power
83	VLP4	Out	Y Signal V.LPF 4 Out
84	VLP3	Out	Y Signal V.LPF 3 Out
85	VLP2	Out	Y Signal V.LPF 2 Out
86	VLP1	Out	Y Signal V.LPF 1 Out
87	VLP0	Out	Y Signal V.LPF 0 Out
88	LS2X	In	Y Signal V.LPF Control 1 In
89	LS2Y	In	Y Signal V.LPF Control 2 In
90	VBLK	In	Vertical Blanking Pulse In
91	HD	In	Horizontal Drive Pulse In
92	VSS	In	Ground
93	VDD	In	+5V DC Power
94	CLK	In	4fsc(PAL:17.7MHz, NTSC:14.5MHz) Clock In
95	CLK2	In	8fsc(PAL:35.4MHz, NTSC:28.6MHz) Clock In
96	RGSELC	In	Red/Green Time Division Signal Output Control In
97	B1HCT	In	Blue signal 1H Delay ON/OFF Control In
98	PXOFF	In	Pixel Offset ON/OFF Control In
99	CLBLK	In	Clock Blanking ON/OFF Control In
100	VSS	In	Ground

The pin identification of IC11 is as follows.

Pin No.	Name	In/Out	Description
1	VSS	In	Ground
2	VDD	In	+5V DC Power
3	LS2Y	Out	Y Signal V.LPF Control 2 Out
4	LS2X	Out	Y Signal V.LPF Control 1 Out

5	VSS	In	Ground
6	VDD	In	+5V DC Power
7	VLP0	In	Y Signal V.LPF 0 In
8	VLP1	In	Y Signal V.LPF 1 In
9	VLP2	In	Y Signal V.LPF 2 In
10	VLP3	In	Y Signal V.LPF 3 In
11	VLP4	In	Y Signal V.LPF 4 In
12	VLP5	In	Y Signal V.LPF 5 In
13	VLP6	In	Y Signal V.LPF 6 In
14	VLP7	In	Y Signal V.LPF 7 In
15	VLP8	In	Y Signal V.LPF 8 In
16	VLP9	In	Y Signal V.LPF 9 In
17	VDD	In	+5V DC Power
18	VSS	In	Ground
19	VBP0	In	Y Signal V.BPF 0 In
20	VBP1	In	Y Signal V.BPF 1 In
21	VBP2	In	Y Signal V.BPF 2 In
22	VBP3	In	Y Signal V.BPF 3 In
23	VBP4	In	Y Signal V.BPF 4 In
24	VBP5	In	Y Signal V.BPF 5 In
25	VBP6	In	Y Signal V.BPF 6 In
26	VBP7	In	Y Signal V.BPF 7 In
27	VBP8	In	Y Signal V.BPF 8 In
28	VBP9	In	Y Signal V.BPF 9 In
29	CHIP4	In	Chip(IC) Select In
30	VDD	In	+5V DC Power
31	VSS	In	Ground
32	NBLK	Out	System (Diagonal) Blanking Pulse Out
33	CAPC	Out	Chrominance Aperture Control out
34	ENH8	Out	Enhancer 8 Out
35	ENH7	Out	Enhancer 7 Out
36	ENH6	Out	Enhancer 6 Out
37	ENH5	Out	Enhancer 5 Out
38	ENH4	Out	Enhancer 4 Out
39	ENH3	Out	Enhancer 3 Out
40	ENH2	Out	Enhancer 2 Out
41	ENH1	Out	Enhancer 1 Out
42	ENH0	Out	Enhancer 0 Out
43	VSS	In	Ground
44	VDD	In	+5V DC Power
45	HAD3	In	I-Vector Noise Suppress Control 3 In for WV-F500, Not Used for WV-F700A
46	HAD2	In	I-Vector Noise Suppress Control 2 In for WV-F500, Not Used for WV-F700A
47	HAD1	In	I-Vector Noise Suppress Control 1 In for WV-F500, Not Used for WV-F700A
48	HAD0	In	I-Vector Noise Suppress Control 0 In for WV-F500, Not Used for WV-F700A
49	VSS	In	Ground
50	VDD	In	+5V DC Power
51	VSS	In	Ground
52	CLK	In	4fsc(PAL:17.7MHz,NTSC:14.3MHz) Clock In
53	CLK2	In	8fsc(PAL:35.4MHz,NTSC:28.6MHz) Clock In
54	VSS	In	Ground
55	DYN0	In	Dynamic Aperture Control 0 In for WV-F500, Not Used for WV-F700A
56	DYN1	In	Dynamic Aperture Control 1 In for WV-F500, Not Used for WV-F700A
57	DYN2	In	Dynamic Aperture Control 2 In for WV-F500, Not Used for WV-F700A
58	DYN3	In	Dynamic Aperture Control 3 In for WV-F500, Not Used for WV-F700A
59	DYN4	In	Dynamic Aperture Control 4 In for WV-F500, Not Used for WV-F700A
60	DYN5	In	Dynamic Aperture Control 5 In for WV-F500, Not Used for WV-F700A
61	VSS	In	Ground
62	VDD	In	+5V DC Power
63	ADR0	In	Address 0 In
64	ADR1	In	Address 1 In
65	ADR2	In	Address 2 In
66	ADR3	In	Address 3 In
67	ADR4	In	Address 4 In
68	ADR5	In	Address 5 In
69	ADR6	In	Address 6 In
70	WE	In	Write Enable In
71	VDD	In	+5V DC Power
72	VSS	In	Ground
73	DB0	In	Data 0 In
74	DB1	In	Data 1 In
75	DB2	In	Data 2 In
76	DB3	In	Data 3 In
77	DB4	In	Data 4 In
78	DB5	In	Data 5 In
79	DB6	In	Data 6 In
80	DB7	In	Data 7 In

81	VDD	In	+5V DC Power
82	VSS	In	Ground
83	SYNC	In	Sync Pulse In for WV-F500, Not Used for WV-F700A
84	BLK	In	Blanking Pulse In
85	BF	In	Burst Flag Pulse In for WV-F500, Not Used for WV-F700A
86	PP	In	PAL Pulse In for WV-F500, Not Used for WV-F700A
87	SP	In	Spare Pulse In(WV-F500:VD,WV-F700A:HD)
88	VDD	In	+5V DC Power
89	VSS	In	Ground
90	SYNC1	Out	Delayed Sync Pulse 1 Out for WV-F500, Not Used for WV-F700A
91	SYNC2	Out	Delayed Sync Pulse 2 Out for WV-F500, Not Used for WV-F700A
92	SYNC3	Out	Delayed Sync Pulse 3 Out for WV-F500, Not Used for WV-F700A
93	BLK1	Out	Delayed Blanking Pulse 1 Out for WV-F500, Not Used for WV-F700A
94	BLK2	Out	Not Used
95	BLK3	Out	Not Used
96	X BF	Out	Delayed Band Pass Filter Pulse Out for WV-F500, Not Used for WV-F700A
97	X PP	Out	Delayed PAL Pulse Out for WV-F500, Not Used for WV-F700A
98	X SP1	Out	Delayed Field Pulse 1 Out for WV-F500, Not Used for WV-F700A
99	X SP2	Out	Not Used for WV-F500, Horizontal Drive Pulse for WV-F700A
100	X SP3	Out	Not Used

The pin identification of IC10 is as follows.

Pin No.	Name	In/Out	Description
1	ENH1	In	Enhancer 1 In
2	ENH2	In	Enhancer 2 In
3	ENH3	In	Enhancer 3 In
4	ENH4	In	Enhancer 4 In
5	ENH5	In	Enhancer 5 In
6	ENH6	In	Enhancer 6 In
7	ENH7	In	Enhancer 7 In
8	ENH8	In	Enhancer 8 In
9	CAPC	In	Chrominance Aperture Control In
10	NBLK	In	System (Diagonal) Blanking Pulse In
11	VDD	In	+5V DC Power
12	VSS	In	Ground
13	VDD	In	+5V DC Power
14	VSS	In	Ground
15	RG0	In	Red/Green Time Division Signal 0 In
16	RG1	In	Red/Green Time Division Signal 1 In
17	RG2	In	Red/Green Time Division Signal 2 In
18	RG3	In	Red/Green Time Division Signal 3 In
19	RG4	In	Red/Green Time Division Signal 4 In
20	RG5	In	Red/Green Time Division Signal 5 In
21	RG6	In	Red/Green Time Division Signal 6 In
22	RG7	In	Red/Green Time Division Signal 7 In
23	RG8	In	Red/Green Time Division Signal 8 In
24	VDD	In	+5V DC Power
25	VSS	In	Ground
26	B0	In	Blue Signal 0 In
27	B1	In	Blue Signal 1 In
28	B2	In	Blue Signal 2 In
29	B3	In	Blue Signal 3 In
30	B4	In	Blue Signal 4 In
31	B5	In	Blue Signal 5 In
32	B6	In	Blue Signal 6 In
33	B7	In	Blue Signal 7 In
34	B8	In	Blue Signal 8 In
35	CLKAD	Out	Address Clock Out
36	CLKDA2	Out	Data Clock 2 Out
37	CLKDA1	Out	Data Clock 1 Out
38	VDD	In	+5V DC Power
39	VSS	In	Ground
40	CLK2	In	8fsc (PAL:35.4MHz, NTSC:28.6MHz) Clock In
41	TEST2	In	Test 2 In
42	TEST1	In	Test 1 In
43	CLK	In	4fsc (PAL:17.7MHz, NTSC:14.3MHz) Clock In
44	VDD	In	+5V DC Power
45	VSS	In	Ground
46	WAKU	In	Frame Signal In

47	MONI0	Out	Monitor 0 Out
48	MONI1	Out	Monitor 1 Out
49	MONI2	Out	Monitor 2 Out
50	MONI3	Out	Monitor 3 Out
51	MONI4	Out	Monitor 4 Out
52	MONI5	Out	Monitor 5 Out
53	MONI6	Out	Monitor 6 Out
54	MONI7	Out	Monitor 7 Out
55	MONI8	Out	Monitor 8 Out
56	MONI9	Out	Monitor 9 Out
57	VDD	In	+5V DC Power
58	VSS	In	Ground
59	VDD	In	+5V DC Power
60	VSS	In	Ground
61	NTSC0	Out	Delayed Y Signal 0 Out
62	NTSC1	Out	Delayed Y Signal 1 Out
63	NTSC2	Out	Delayed Y Signal 2 Out
64	NTSC3	Out	Delayed Y Signal 3 Out
65	NTSC4	Out	Delayed Y Signal 4 Out
66	NTSC5	Out	Delayed Y Signal 5 Out
67	NTSC6	Out	Delayed Y Signal 6 Out
68	NTSC7	Out	Delayed Y Signal 7 Out
69	NTSC8	Out	Delayed Y Signal 8 Out
70	NTSC9	Out	Delayed Y Signal 9 Out
71	VDD	In	+5V DC Power
72	VSS	In	Ground
73	BYB9	Out	B-Y(B) Signal 9 Out
74	BYB8	Out	B-Y(B) Signal 8 Out
75	BYB7	Out	B-Y(B) Signal 7 Out
76	BYB6	Out	B-Y(B) Signal 6 Out
77	BYB5	Out	B-Y(B) Signal 5 Out
78	BYB4	Out	B-Y(B) Signal 4 Out
79	BYB3	Out	B-Y(B) Signal 3 Out
80	BYB2	Out	B-Y(B) Signal 2 Out
81	BYB1	Out	B-Y(B) Signal 1 Out
82	BYB0	Out	B-Y(B) Signal 0 Out
83	VDD	In	+5V DC Power
84	VSS	In	Ground
85	VDD	In	+5V DC Power
86	VSS	In	Ground
87	RYR9	Out	R-Y(R) Signal 9 Out
88	RYR8	Out	R-Y(R) Signal 8 Out
89	RYR7	Out	R-Y(R) Signal 7 Out
90	RYR6	Out	R-Y(R) Signal 6 Out
91	RYR5	Out	R-Y(R) Signal 5 Out
92	RYR4	Out	R-Y(R) Signal 4 Out
93	RYR3	Out	R-Y(R) Signal 3 Out
94	RYR2	Out	R-Y(R) Signal 2 Out
95	RYR1	Out	R-Y(R) Signal 1 Out
96	RYR0	Out	R-Y(R) Signal 0 Out
97	VDD	In	+5V DC Power
98	VSS	In	Ground
99	YG9	Out	Y(G) Signal 9 Out
100	YG8	Out	Y(G) Signal 8 Out
101	YG7	Out	Y(G) Signal 7 Out
102	YG6	Out	Y(G) Signal 6 Out
103	YG5	Out	Y(G) Signal 5 Out
104	YG4	Out	Y(G) Signal 4 Out
105	YG3	Out	Y(G) Signal 3 Out
106	YG2	Out	Y(G) Signal 2 Out
107	YG1	Out	Y(G) Signal 1 Out
108	YG0	Out	Y(G) Signal 0 Out
109	VDD	In	+5V DC Power
110	VSS	In	Ground
111	CLK2OPT	—	Not Used
112	CLK2LSI	Out	8fsc (PAL:35.4MHz, NTSC:28.6MHz) Clock Out
113	LSI3CLK2	In	8fsc (PAL:35.4MHz, NTSC:28.6MHz) Clock In
114	CLKLSI	Out	4fsc (PAL:17.7MHz, NTSC:14.3MHz) Clock Out
115	LSI3CLK	In	4fsc (PAL:17.7MHz, NTSC:14.3MHz) Clock In
116	VDD	In	+5V DC Power
117	VSS	In	Ground
118	DB0	In	Data 0 In
119	DB1	In	Data 1 In
120	DB2	In	Data 2 In
121	DB3	In	Data 3 In
122	DB4	In	Data 4 In
123	DB5	In	Data 5 In
124	DB6	In	Data 6 In
125	DB7	In	Data 7 In
126	VDD	In	+5V DC Power
127	VSS	In	Ground
128	VDD	In	+5V DC Power
129	VSS	In	Ground
130	WE	In	Write Enable In
131	ADR0	In	Address 0 In
132	ADR1	In	Address 1 In
133	ADR2	In	Address 2 In
134	ADR3	In	Address 3 In
135	ADR4	In	Address 4 In
136	ADR5	In	Address 5 In
137	ADR6	In	Address 6 In
138	VDD	In	+5V DC Power
139	VSS	In	Ground
140	HD	In	Horizontal Drive Pulse In
141	VBLK	In	Vertical Blanking Pulse In
142	F	In	Field Pulse In
143	CHIP3	In	Chip(IC) Select In
144	ENH0	In	Enhancer 0 In

7. Sync/Encoder Board

7-1. Sync Pulse Generator Circuit

This circuit receives the 17.7MHz FOR PAL <14.3MHz for NTSC> in the internal sync mode or external sync mode and generates all pulses used in the camera.

The Pin identification of IC4 is as follows.

Pin No.	Name	In/Out	Description
1	GL.MM	I/O	G/L Mode Detector
2	V.BL SW1	In	Vertical Blanking Select 1
3	VDD1	---	+4.8V DC Power
4	G/L MMSW	---	Not Used
5	N/P	In	NTSC/PAL Select (NTSC:OPEN, PAL:L)
6	I.EO	Out	Sync Mode Select (H:INT, L:G/L)
7	G/L SYNC	In	G/L Sync Signal
8	VDD1	---	+4.8V DC Power
9	VSS1	---	Ground
10	TEST 1	---	Not Used
11	TEST 2	---	Not Used
12	TEST 3	---	Not Used
13	TEST 4	---	Not Used
14	VSS1	---	Ground
15	EBI	In	In the PAL Mode:Ext Delay of Burst Sub-Carrier Odd line
16	PBI	In	In the PAL Mode:Ext Delay of Burst Sub-Carrier Even line In the NTSC Mode:Ext Delay of Burst Sub-Carrier
17	EBO	Out	In the PAL Mode:Ext delay of Burst Sub-Carrier Odd line
18	PBO	Out	In the PAL Mode:Ext Delay of Burst Sub-Carrier Even line In the NTSC Mode:Ext Delay of Burst Sub-Carrier
19	GSE	---	Not Used
20	VSS(INT)	---	Ground
21	VDD(INT)	---	+4.8V DC Power
22	SPD	Out	Sub-Carrier Phase Detector Output
23	SVI	In	EXT OSC Input for Sub-Carrier Lock
24	SVO	Out	EXT OSC Output for Sub-Carrier Lock
25	OSC/I	In	Oscillator In
26	OSC/O	Out	Oscillator Out(NTSC Only)
27	VSS(G/S)	---	Ground
28	VDD(G/S)	---	+4.8V DC Power for WV-F700A (Not Used for WV-F500)
29	G SC	I/O	G/L Mode:S/C 1, S/C 2 or BSC Shift for MM Circuit
30	VSS(G/S)	---	Ground
31	VDD(S2C)	---	+4.8V DC Power
32	S2C	I/O	Quad Adjustment
33	VSS(S2C)	---	Ground
34	VDD(S2C)	---	+4.8V DC Power
35	S1C	I/O	Sub-Carrier H Adjustment
36	VSS(S1C)	---	Ground
37	VDD(P2C)	---	+4.8V DC Power
38	P2C	I/O	Sub-Quad Adjustment(PAL Only)
39	VSS(P2C)	---	Ground
40	VDD1	---	+4.8V DC Power
41	G/L CRS2	In	S/C1, S/C2 & BSC Phase Selection
42	G/L CRS1	In	S/C1, S/C2 & BSC Phase Selection
43	GBS	In	Gen-Lock Burst Input
44	SHC	In	90° Phase Shifter Control for NTSC(H:0° , L:90°)
45	SC1	Out	Sub-Carrier 1 Output
46	SC2	Out	Sub-Carrier 2 Output NTSC:90° Advanced Sub-Carrier against Sub-Carrier 1 PAL:90° /270° Alternative Sub-Carrier
47	PSQ	Out	PAL SQ Signal(PAL Only)
48	BFP	Out	Burst Flag Pulse
49	GBG	---	Not Used
50	ZBR	---	Not Used
51	BSC	---	Not Used
52	VSS1	---	Ground
53	VDD1	---	+4.8V DC Power
54	ALX	I/O	M.M.Circuit for ALC
55	AL1	---	Not Used
56	ALC	Out	ALC Gate Pulse Signal
57	FLM	Out	PAL Mode:Field 1 Output of 1/4V Color Frame Pulse NTSC Mode:Field 1 Output of 1/8V Color Frame Pulse
58	VD	Out	Vertical Drive Pulse Signal
59	VS	Out	Vertical Start Pulse Signal
60	VBL	Out	V Blanking out for WV-F500 (Not Used for WV-F700)
61	VIS	---	Not Used
62	VRS	In	Vertical Reset Input During G/L Mode
63	HB1	In	Horizontal Blanking Width Select 1
64	VDD1	---	+4.8V DC Power

65	VSS1	---	Ground
66	HB2	In	Horizontal Blanking Width Select 2
67	HRS	---	Not Used
68	HD	Out	Horizontal Drive Pulse
69	CP	Out	Clamp Pulse
70	HWS	Out	Horizontal Wipe Signal
71	FH	---	Not Used
72	BCP	---	Not Used
73	VSS1	---	Ground
74	VDD1	---	+4.8V DC Power
75	HPE	---	Not Used
76	GPE	---	Not Used
77	VSS (H/P)	---	Ground
78	VDD(H/P)	---	+4.8V DC Power
79	H.P.C.	I/O	Horizontal Pulse Phase Shift for G/L Mode
80	VSS(H/P)	---	Ground
81	VDD(G/P)	---	+4.8V DC power
82	G/L PC	I/O	horizontal Pulse Phase Shift for G/L Mode
83	VSS(H)	---	Ground
84	VDD(H)	---	+4.8V DC Power
85	H.PI	In	Horizontal Phase Lock Pulse In
86	H.PO	Out	Horizontal Phase Lock Pulse Out for WV-F700A (Not Used for WV-F500)
87	H.PD	Out	Horizontal Phase Lock Detect Out
88	P.VI	In	VCXO In(PAL Only)
89	P.VO	Out	VCXO Out(PAL Only)
90	P.VD	Out	Phase Lock Detect Out for VCXO(PAL Only)
91	LPT	---	Not Used
92	VDD1	---	+4.8V DC Power
93	VSS1	---	Ground
94	V.W.S	Out	Vertical Wipe Out for WV-F700A (PAL Only)
95	C.V.S	---	Not Used
96	C.S BL	Out	Composite System Blanking Signal
97	C.P BL	Out	Composite Pre Blanking Signal WV-F700A (NTSC Only) and WV-F500A
98	C.SYNC	Out	Composite Sync Signal
99	VSS1	---	Ground
100	V.BL SW2	In	Vertical Blanking Width Select 2

7-2. Encoder Circuit

7-2-1. Y (luminance) signal process circuit

- S-Y signal output circuit
  The Y signal is supplied to amplifier circuit consisting of Q55, Q54 and Q53, where the signal is amplified and mixed with C Sync signal and character signal. After mixed, the Y signal is output as S-Y signal through output circuit consisting of Q52, Q51 and Q49.
- EVF Y signal output circuit
  The Y signal is supplied to amplifier circuit consisting of Q42, Q43 and Q44, where the signal is amplified and mixed with C. Sync, character, and safety zone signals. After mixed, the Y signal is supplied video output circuit and return video/EVF Y signal selector IC42. The IC selects either EVF Y signal or return video signal and selected signal is then supplied to EVF. The control signal (RET CNT) for this IC42 is supplied from lens.
- M II Y signal output circuit
  The Y signal is supplied to amplifier circuit consisting of Q89, Q88 and Q87, where the signal is amplified and mixed with C. Sync signal and character signal. After mixed, the Y signal is output as M II Y signal through output circuit consisting of Q86 and Q85.
- Video output circuit
  The Y signal from S-Y signal output circuit is supplied to Y/C Mix circuit consisting of Q50 and Q48, where the Y signal is mixed with C signal to make composite video signal. The generated composite video signal is then supplied to selector circuit consisting of IC32 (a), IC33 and Q47. This circuit selects either EVF Y signal or composite video signal and selected signal is then supplied to both Monitor output connector and camera adaptor. The control signal (ENC/VF) for this circuit is supplied from RCU/RCB.

7-2-2. C (chrominance) signal encoder circuit

- R-Y signal processing circuit
  The R-Y signal is supplied to amplifier circuit consisting of Q56~Q59, where the signal is amplified and mixed with BFP (Burst Flag Pulse) signal. The mixed signal is then modulated by SC (Subcarrier) signal at balance modulator IC (IC37) and then supplied to C signal output circuit.
- B-Y signal processing circuit
  The B-Y signal is supplied to amplifier circuit consisting of Q61~Q64, Q66 and Q67, where the signal is amplified and mixed with BFP signal. The mixed signal is then modulated by SC signal at balance modulator IC (IC36) and then supplied to C signal output circuit.
- C signal output circuit
  The modulated R-Y and B-Y signals are mixed at Q69 to generate C signal. The generated C signal is supplied to video output circuit through Q71 and also output as S-C signal through Q72~Q74.

8. System Control Board (WV-F500)

The System Control is an 8 bit 8MHz microprocessor based system.
The simplified block diagram of the system control circuit is shown in Fig.8-1.
The system control circuit is consisting with following circuit.
(1).CPU(Microprocessor), IC2
(2).ROM, IC3 : This IC hold the System Programme for each function.
(3).RAM, IC4 : This IC backed up all of information(ABC, AWC, Shading, User Set etc.)
(4).I/O, IC1 : This IC receives the control information(signal) and output the switch information to the system.
(5).D/A Converter, IC5 : This IC Convert the control signal (Gain, Pedestal etc) to an analog.
(6).Character Generator, IC7 : This IC generate the characters for viewfinder.
(7).Shading Correction Circuit, IC20, 22, 24, 19, 21, 23

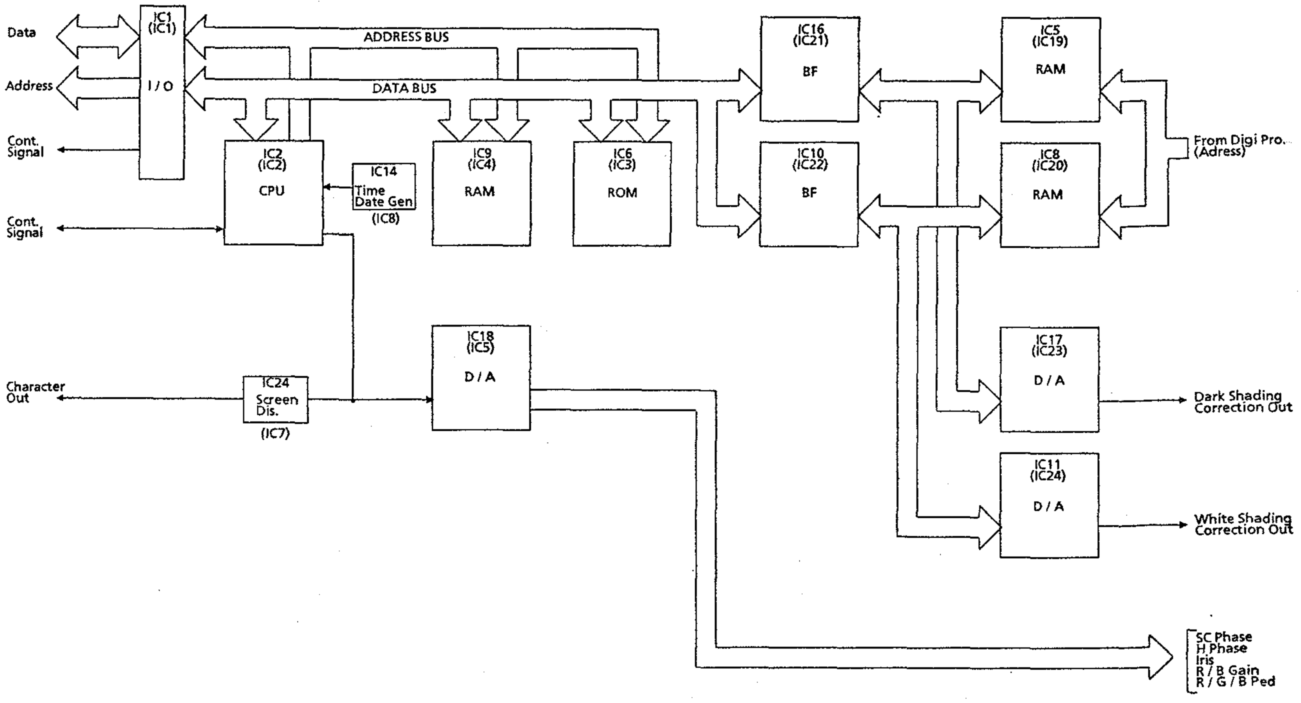

Data
Address
Cont. Signal
Cont. Signal
Character Out
IC1 (IC1) I/O
ADDRESS BUS
DATA BUS
IC2 (IC2) CPU
IC14 Time Date Gen (IC8)
IC9 (IC4) RAM
IC6 (IC3) ROM
IC16 (IC21) BF
IC10 (IC22) BF
IC5 (IC19) RAM
IC8 (IC20) RAM
From Digi Pro. (Adress)
IC18 (IC5) D/A
IC24 Screen Dis. (IC7)
IC17 (IC23) D/A
Dark Shading Correction Out
IC11 (IC24) D/A
White Shading Correction Out
SC Phase
H Phase
Iris
R / B Gain
R / G / B Ped

Fig. 8-1 System Control Block Diagram for WV-F700A (WV-F500)

The pin identification of IC1 is as follows.

Pin No.	Name	In/Out	Description
1	ADR2	In	Address 2
2	ADR3	In	Address 3
3	VDD	---	+5V DC Power
4	ADR4	In	Address 4
5	ADR5	In	Address 5
6	ADR6	In	Address 6
7	ADR7	In	Address 7
8	ADR8	In	Address 8
9	ADR9	In	Address 9
10	ADR10	In	Address 10
11	ADR11	In	Address 11
12	ADR12	In	Address 12
13	ADR13	In	Address 13
14	ADR14	In	Address 14
15	VDD	---	+5V DC Power
16	VSS	---	Ground
17	ADR15	In	Address 15
18	SIN	In	SIN
19	WEN	In	Write Enable Control
20	REN	In	Read Enable Control
21	CLK	In	8MHz
22	LD0	I/O	Data 0 In/Out
23	LD1	I/O	Data 1 In/Out
24	LD2	I/O	Data 2 In/Out
25	LD3	I/O	Data 3 In/Out
26	LD4	I/O	Data 4 In/Out
27	VDD	---	+5V DC Power
28	VDD	---	+5V DC Power
29	LD5	I/O	Data 5 In/Out
30	LD6	I/O	Data 6 In/Out
31	LD7	I/O	Data 7 In/Out
32	LWEN	In	Write Enable Control In
33	LS1	---	Not Used
34	LREN	In	Read Enable Control In
35	LA0	Out	Address 0 Out
36	LA1	Out	Address 1 Out
37	LA2	Out	Address 2 Out
38	LA3	Out	Address 3 Out
39	LA4	Out	Address 4 Out
40	VSS	---	Ground
41	LA5	Out	Address 5 Out
42	LA6	Out	Address 6 Out
43	LA7	Out	Address 7 Out
44	LA8	Out	Address 8 Out
45	LA9	Out	Address 9 Out
46	LA10	Out	Address 10 Out
47	LA11	Out	Address 11 Out
48	LA12	Out	Address 12 Out
49	LA13	Out	Address 13 Out
50	LA14	Out	Address 14 Out
51	LA15	Out	Address 15 Out
52	CD7	Out	REC Trigger Out
53	VDD	---	+5V DC Power
54	CD6	Out	Video Control Out
55	CD5	Out	SC Coarse 2 Out
56	CD4	Out	SC Coarse 1 Out
57	CD3	Out	ROP(RCB)/RCU Control Out
58	CD2	Out	Reset Pulse Out
59	CD1	Out	Reset Pulse Out
60	CD0	Out	Gamma Control Out
61	P20	In	LMW In
62	P21	In	MPX/RCU Control In
63	P22	In	Data(White Balance) Reset Pulse In
64	P23	In	Data(Knee) Reset Pulse In
65	VSS	---	Ground
66	VDD	---	+5V DC Power
67	CSEL0	Out	Chip(IC) Select 0 Out
68	CSEL1	Out	Chip(IC) Select 1 Out
69	CW0	In	Black Shading Memory Write Enable Chip(IC) Select In
70	CW1	In	White Shading Memory Write Enable Chip(IC) Select In
71	CS0	In	Black Shading Memory Chip(IC) Select In
72	CS1	In	White Shading Memory Chip(IC) Select In
73	P10	Out	High Gain Indication(Zebra) Out
74	P11	Out	Shutter On/Off Out
75	P12	Out	Auto Indication Out
76	P13	Out	Battery Warning Indication Out
77	P14	Out	Iris 1/2 Open Out
78	VDD	---	+5V DC Power
79	P15	Out	Iris 1/2 Close Out
80	VSS	---	Ground
81	TEST 0	---	Not Used
82	VBLK	Out	Vertical(14H) Blanking Pulse Out
83	HBLK	Out	Horizontal Blanking Pulse Out
84	EROMS	Out	EROMS Out
85	RAMS	Out	RAMS Out
86	P30	Out	S1, S2
87	P31	Out	50KHz Out
88	P32	Out	S1
89	P33	Out	S2
90	DO	In	Data 0

91	VSS	---	Ground
92	D1	In	Data 1
93	D2	In	Data 2
94	D3	In	Data 3
95	D4	In	Data 4
96	D5	In	Data 5
97	D6	In	Data 6
98	D7	In	Data 7
99	ADR0	In	Address 0
100	ADR1	In	Address 1

Pin identification of IC2 is as follows.

Pin No.	Name	In/Out	Description
1	S/H	---	Sample Hold
2	AVSS	---	Ground
3	VSS	---	Ground
4	P67	Out	Address 15 Out
5	P66	Out	Address 14 Out
6	P65	Out	Address 13 Out
7	P64	Out	Address 12 Out
8	P63	Out	Address 11 Out
9	P62	Out	Address 10 Out
10	P61	Out	Address 9 Out
11	P60	Out	Address 8 Out
12	P57	Out	Address 7 Out
13	P56	Out	Address 6 Out
14	P55	Out	Address 5 Out
15	P54	Out	Address 4 Out
16	P53	Out	Address 3 Out
17	P52	Out	Address 2 Out
18	P51	Out	Address 1 Out
19	P50	Out	Address 0 Out
20	EXI	---	+5V DC Power
21	EXO	---	Not Used
22	P47	Out	Read Enable Control Out
23	P46	Out	Write Enable Control Out
24	P45	---	Not Used
25	P44	---	Not Used
26	P43	---	Not Used
27	P42	---	Not Used
28	P41	Out	SIN Out
29	P40	Out	S0N Out
30	RST(P84)	In	Reset Pulse In
31	OSC1	In	8MHz
32	OSC2	Out	8MHz
33	VSS	---	Ground
34	X1	---	Ground
35	X0	---	Not Used
36	VDD	---	+5V DC Power
37	IRO3(P27)	In	Tape Rewind Control In
38	IRO2(P26)	In	Reset Pulse In
39	IRO1(P25)	In	Vertical Drive Pulse In
40	IRO0(P24)	Out	LMW Out
41	P37	Out	+6dB Control Out
42	P36	Out	-6dB Control Out
43	P35	Out	Select C Out
44	P34	Out	Select B Out
45	P33	Out	Select A Out
46	P32	Out	REC Tally Out
47	P31	Out	Clock Out
48	P30	Out	Data Out
49	SBT(P87)	Out	Clock(125kHz) Out
50	SBI(P86)		
51	SBO(P85)	Out	Data
52	TXD(P80)	Out	TXD(Transmission Data) Out
53	RXD(P23)	In	RXD(Receiving Data) In
54	TC102(P22)	Out	Busy Out
55	TC101(P21)	In	Data Input Switch In
56	TC100(P20)	In	Tape Control Pulse In
57	P17	Out	Horizontal Blanking Pulse Out
58	P16	Out	REC Trigger Out
59	P15	---	+5V DC Power
60	P14	Out	Iris A/R Control Out
61	P13	Out	Bar/Cam Select Out
62	P12	Out	Shutter C Out
63	P11	Out	Shutter B Out
64	P10	Out	Shutter A Out
65	P77	In	Data 7 In
66	P76	In	Data 6 In
67	P75	In	Data 5 In
68	P74	In	Data 4 In
69	P73	In	Data 3 In
70	P72	In	Data 2 In
71	P71	In	Data 1 In
72	P70	In	Data 0 In
73	VDD	---	+5V DC Power
74	AVDD	---	+5V DC Power
75	VREF	In	Reference Voltage In
76	DAC3	Out	Shutter Switch Out
77	DAC2	Out	Gate Control Out
78	DAC1	Out	ALC P/A Control Out
79	DAC0	Out	RCB/RCU Control Out
80	ADC3	In	Z1-Z8 In
81	ADC2	In	Y1-Y8 In
82	ADC1	In	X1-X4 In
83	ADC0	In	W1-W4 In
84	VREF	In	Reference Voltage In

The pin identification of IC5 is as follows.

Pin No.	Name	In/Out	Description
1	VSS	---	Ground
2	AO3	Out	8 bit D/A Output 3 (B Pedestal)
3	AO4	Out	8 bit D/A Output 4 (G Pedestal)
4	AO5	Out	8 bit D/A Output 5 (R Pedestal)
5	AO6	Out	8 bit D/A Output 6 (HG Control)
6	AO7	Out	8 bit D/A Output 7 (Iris Control)
7	AO8	Out	8 bit D/A Output 8 (Iris Control)
8	AO9	Out	8 bit D/A Output 9 (H Phase)
9	AO10	Out	8 but D/A Output 10 (H Phase)
10	VDD	---	+5V DC Power
11	VCC	---	+5V DC Power
12	AO11	Out	8 bit D/A Output 11 (SC Fine)
13	AO12	Out	8 bit D/A Output 12 (SC Fine)
14	DO	---	Not Used
15	LD	In	Load Pulse
16	CLK	In	Shift Clock Pulse
17	DI	In	Serial Data Input
18	AO1	Out	8 bit D/A Output 1 (R Gain Out)
19	AO2	Out	8 bit D/A Output 2 (B Gain Out)
20	GND	---	Ground

8-2. Shading Correction(WV-F500)

The White Shading Correction circuit consisting of IC20, 22 and 24, and the Black Shading Correction circuit consisting of IC19, 21 and 23.

The Block data (IC4 on the digital Process board) of each channel applied to the CPU IC2 through I/O IC1.
The CPU calculate the correction value according to block data, then CPU send the shading correction data to IC20 through IC22(A0 to A14). Also this correction data applied to RAM IC4.
The correction data which stored in the IC21 are supplied to D/A converter IC24, then D/A converted signal is output to Gain Control Circuit in the preprocess Board. The output terminal is selected by channel select control signal as follows.

Channel Select		Output
C0	C1	
H	L	A01(R)
L	H	A02(G)
H	H	A03(B)

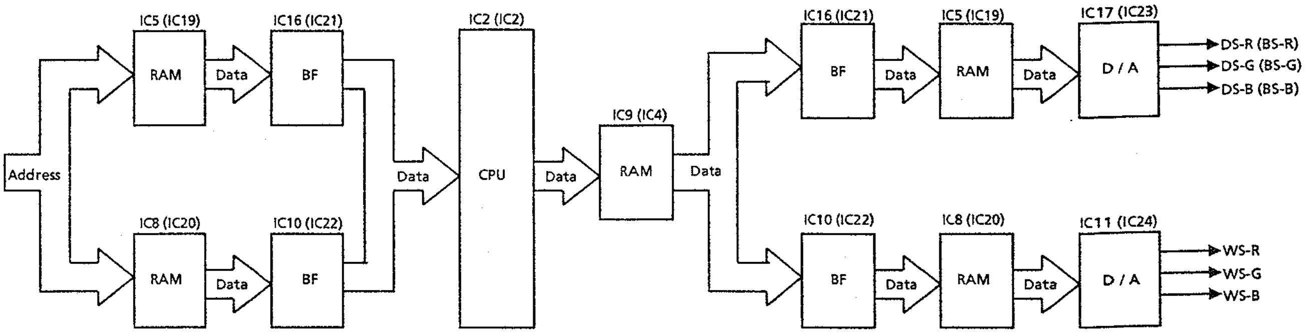

IC5 (IC19)
RAM
Data
IC16 (IC21)
BF
IC2 (IC2)
Address
IC8 (IC20)
RAM
Data
IC10 (IC22)
BF
Data
CPU
Data
IC9 (IC4)
RAM
Data
IC16 (IC21)
BF
Data
IC5 (IC19)
RAM
Data
IC17 (IC23)
D / A
DS-R (BS-R)
DS-G (BS-G)
DS-B (BS-B)
IC10 (IC22)
BF
Data
IC8 (IC20)
RAM
Data
IC11 (IC24)
D / A
WS-R
WS-G
WS-B

Fig. 8-2 Shading Correction Block Diagram for WV-F700A (WV-F500)

The pin identification of IC11(IC17) for WV-F700A <IC24(IC23) for WV-F500> is as follows

Pin No.	Name	In/Out	Description
1	D0	In	Data 0
2	D1	In	Data 1
3	D2	In	Data 2
4	D3	In	Data 3
5	D4	In	Data 4
6	D5	In	Data 5
7	D6	In	Data 6
8	D7	In	Data 7
9	C0	In	Output Channel Select Signal 0
10	C1	In	Output Channel Select Signal 1
11	WR	In	Data Write Enable Clock signal
12	CE	In	Chip Enable Signal
13	DG	In	Ground
14	AG	In	Ground
15	VSS	—	-5V DC power
16	AO3	Out	Channel 3 Analog Output
17	AO2	Out	Channel 2 Analog Output
18	AO1	Out	Channel 1 Analog Output
19	AO0	Out	Channel 0 Analog Output(Not Used)
20	VR	—	Reference Voltage In
21	NC	—	Not Used
22	VDD	—	+5V DC Power
23	PD	In	Power Down Control Signal
24	RESET	In	Reset Signal In

9. Camera Adaptor

The camera adaptor provides the link between the camera head and the studio equipments. It will buffer and select the video signal and provide the multiplexed connection for remote control unit.

There are three main boards in the camera adaptor WV-AD700S, Video , Modulator for the multiplexed control data out and Demodulator for the multiplexed control data in, and there are two main board in the camera adaptor WV-AD500, Video and Audio boards.

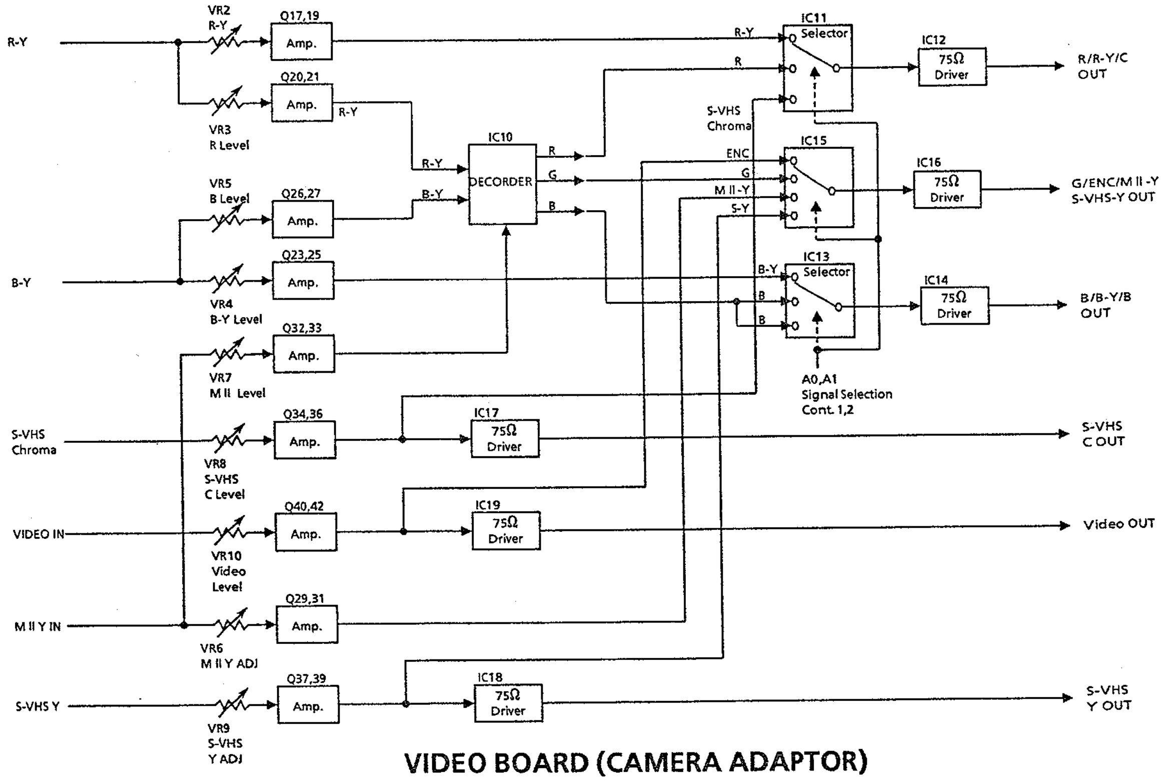
9-1. Video Board(WV-AD500/WV-AD700)

9-1-1. Video(ENC) Output Circuit

The video signal supplied from camera head is amplified by Q40 and Q42. Amplified video signal is sent to pin video output connector, 26pin VTR/RCU connector, pin 1 of IC15(Output Signal Selector) and Video/Auxiliary Selection circuit.

9-1-2. Y/C Output Circuit

The Y(S-VHS Y) <C(Chrominance)> signal supplied from camera head is amplified by Q37 <Q34 for C> and Q39 <Q36 for C>. Amplified Y <C> signal is sent to S-Video output connector and pin 5 of IC15(Output Signal Selector) <IC11 for C>


R-Y
VR2 R-Y
Q17,19
Amp.
Q20,21
Amp.
R-Y
VR3 R Level
VR5 B Level
Q26,27
Amp.
IC10
R-Y
B-Y
DECORDER
R
G
B
B-Y
Q23,25
Amp.
VR4 B-Y Level
Q32,33
Amp.
VR7 M II Level
S-VHS Chroma
Q34,36
Amp.
VR8 S-VHS C Level
IC17
75Ω Driver
VIDEO IN
Q40,42
Amp.
VR10 Video Level
IC19
75Ω Driver
M II Y IN
Q29,31
Amp.
VR6 M II Y ADJ
S-VHS Y
Q37,39
Amp.
VR9 S-VHS Y ADJ
IC18
75Ω Driver
IC11 Selector
R-Y
R
S-VHS Chroma
IC12
75Ω Driver
R/R-Y/C OUT
IC15
ENC
G
M II-Y
S-Y
IC16
75Ω Driver
G/ENC/M II -Y S-VHS-Y OUT
IC13 Selector
B-Y
B
B
IC14
75Ω Driver
B/B-Y/B OUT
A0,A1 Signal Selection Cont. 1,2
S-VHS C OUT
Video OUT
S-VHS Y OUT

VIDEO BOARD (CAMERA ADAPTOR)

9-1-3. Y/R-Y/B-Y(R/G/B, C/Y/B) Output Circuit

The Y(MII Y), R-Y and B-Y signals supplied from camera head is applied to tow amplifiers. Amplified Y signal by Q32 and Q33 <R-Y by Q20/Q21, B-Y by Q26/Q27> is supplied to pin 4 of IC10(Decoder) <pin 2 for R-Y, pin 3 for B-Y> to produce the R, G and B signals. The R signal is supplied to pin 2 of IC11 <pin 2 of IC15 for B, pin 2 and pin 4 of IC13 for B>, and another amplified Y signal by Q29 and Q31 <R-Y by Q17/Q19, B-Y by Q23/Q5> is supplied to pin 4 of IC15. <pin 4 of IC11 for R-Y, pin 4 of IC11 for B-Y>.

9-2. Audio Board(WV-AD500)

9-2-1. Audio Output Circuit

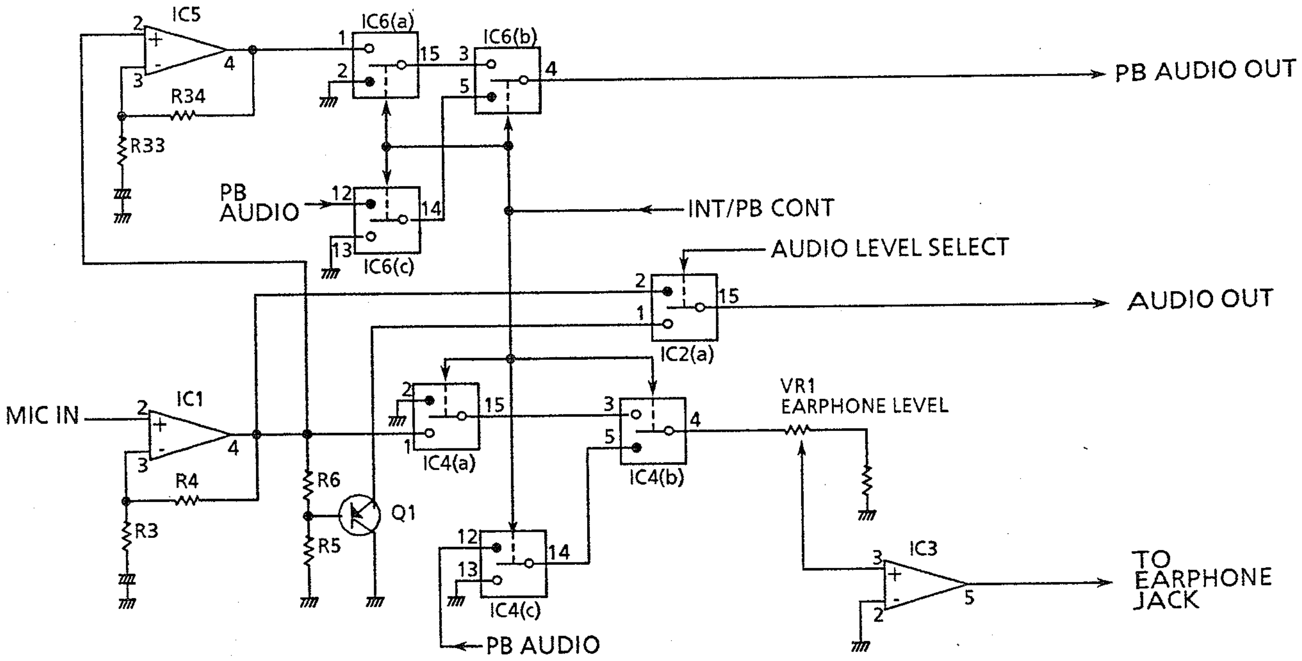
The audio signal picked up by microphone is supplied to pin 2 of IC1 (+40dB amplifier) through video board. Amplified audio signal is supplied to pin 2 of IC2(a) and attenuated audio signal by Q1, R5 and R6 is supplied to pin 1 of IC2(a). Then selected audio signal -60dB or -20dB controlled by Audio Level Selection Switch SW1 on the Switch Board is supplied to pin 9 of 26-pin VTR/RCU conector.

9-2-2. Earphone Jack Output Circuit

The -20dB audio signal is supplied to pin 3 of IC4(b) through IC4(a) and the PB audio is suppled to pin 5 of IC4(b) which are controlled by Earphone Selection Switch SW2 and selected audio signal microhpne audio or PB audio is supplied to Earphone Jack through earphone level VR1.

9-2-2. PB(Playback) Audio Output Circuit

The -20dB audio signal is supplied to pin 2 of IC5(+15dB Amplifier) and then amplified audio signal is supplied to pin 1 of IC6(a), on the other hand PB(playback) audio signal is supplied to pin 12 of IC6(c). The outputs of these ICs are controlled by Earphone Selection Switch SW2 and selected audio signal microphone audio or PB audio is supplied to Camera Head through 68-pin connector.



IC5
R34
R33
IC6(a)
IC6(b)
PB AUDIO OUT
PB AUDIO
IC6(c)
INT/PB CONT
AUDIO LEVEL SELECT
AUDIO OUT
IC2(a)
MIC IN
IC1
R4
R3
R6
R5
Q1
IC4(a)
IC4(b)
VR1 EARPHONE LEVEL
IC4(c)
PB AUDIO
IC3
TO EARPHONE JACK

AUDIO BOARD (CAMERA ADAPTOR)

9-3. Modulator Board(WV-AD700)

The modulator circuit modulates the video signal of camera to 8MHz and data of camera condition to 17MHz. Then transfered to RCU via coaxial cable.

9-4. Demodulator Board(WV-AD700)

The demodulator circuit demodulates the 26MHz of G/L signal and 13MHz of data which are transfered from the RCU via coaxial cable. Then demodulated G/L signal and data are supplied to the camera head through 68-pin connector.

9-5. Sub Mother Board(WV-AD700)

9-5-1. Audio Output Circuit

The audio signal picked up by microphne is supplied to pin 1 of IC1(a) (+40dB amplifier). Amplified audio signal is supplied to pin 3 of IC2 and attenuated audio signal by Q1, R5 and R6 is supplied to pin 5 of IC2. Then selected audio signal -60dB or -20dB controlled by Audio Level Selection Switch SW1 is supplied to VTR/RCU connector.

9-5-2. Earphone Jack Output Circuit

The audio signal from the microphone is supplied to pin 1 of IC3 and PB(Playback) audio signal from the VTR/RCU connector is supplied to pin 12 of IC3 which are controlled by Earphone Out Selection Switch SW2 and selected audio microphone audio or PB(Playback) audio is supplied to Earphone Jack.

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